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Original Articles.

THE TREATMENT OF ACUTE ANTERIOR POLIOMYELITIS BY NERVE TRANSPLANTATION.*

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PHILADELPHIA.

Acute anterior poliomyelitis is generally recognized as an inflammation of the gray matter of the anterior horns of the spinal cord. The cases in which an examination of the spinal cord has been possible in the early stages of the disease have shown congestion of blood vessels, round cell infiltration about the vessels and within the nervous tissue, and more or less destruction of the nervous elements. The paralysis which occurs as a result of these lesions develops early in the disease and is usually extensive, and more so than at later stages. Some of the nerve cells of the anterior horns are so seriously damaged that they are incapable of regeneration, and the muscles formerly innervated from these, atrophy and lose their function. Other nerve cells are only seriously diseased and are still capable of at least partial restoration, and function returns later in the muscles innervated by these cells.

The representation of the muscles within the spinal cord is a matter of dispute and need not concern us in this connection. It is important, however, to bear in mind that in anterior poliomyelitis the muscles that remain permanently paralyzed represent nerve cells of the anterior horns which have degenerated, and that muscles which have recovered represent nerve cells which have regained their function. It is the usual experience that restoration of function in anterior poliomyelitis occurs in some of the muscles which at first were partially or even completely paralyzed, but this restoration, if it occurs, takes place within a few months following the onset of the disease. Certain muscles almost invariably remain functionless.

Medicinal treatment, massage and electricity are of little avail so far as these persistently paralyzed muscles are concerned; but there is in selected cases a hope for surgical intervention. In cases in which only one or two muscles of a group remain paralyzed, we may expect good results by uniting the nerve supply of these paralyzed muscles with a motor nerve in the vicinity, as in this way healthy nerve cells are brought into union with diseased nerve fibers and the latter may regenerate.

This procedure is not permissible within the three or four months immediately following the development of the paralysis, because, during this time, it is impossible to determine accurately which muscles will recover their function and which will not. Muscles that still remain paralyzed after six months are not likely to regain contractile power, and we are of the opinion that at the end of six months would be the most suitable period for operation, although recovery is still possible from operation at a later date.

Those cases in which a whole limb or the greater part of a limb remains paralyzed are not adapted to surgical treatment, and only those cases should be selected in which a few muscles are paralyzed.

Having these facts in mind, one of us (Spiller) proposed to Dr. J. K. Young that in a case of poliomyelitis of over two years' duration, in which the anterior tibial muscle alone was paralyzed, a nerve transplantation might be employed. The patient was a child. Investigations on the cadaver were made by Dr. Young to determine the method most suitable to the case. Dr. Young made an incision 10 cm. in length downward from the head of the tibia in the bony axis of the leg. The incision included the skin and superficial fascia. The deep fascia was divided on a grooved director, exposing the peroneal nerve. The nerve was followed down, and by separating the peroneus longus muscle three divisions were found: 1, The fasciculus of the nerves supplying the upper part of the anterior tibial muscle; 2, the anterior tibial nerve; 3, the musculocutaneous nerve; these divisions corresponding to those found in the cadaver. It was decided to take the upper division, of which there were four or five branches, and perforating the external division, the musculo-cutaneous, the former were united to the outer side of the latter by fine catgut sutures.

Great care was taken not to injure the musculo-cutaneous nerve any more than necessary, and the branches of the nerve which supply the anterior tibial muscle at its upper part were pushed through the incision in the musculo-cutaneous nerve without any attempt being made to separate the nerve fibers from the sheath. Small instruments were used, and the nerves were handled as little as possible.

The nerves which were anastomosed were divided as high up as possible, so that there would be no tension on them. The deep fascia was not closed with sutures. The skin was united by interrupted sutures. Over the antiseptic dressing a plaster-of-paris cast was applied to insure fixation of the limb.

This operation was done Dec. 4, 1902, and the case was reported[1] and the child presented before the Philadelphia Neurological Society, Feb. 24, 1903. At the time of presentation some improvement in the movement of the anterior tibial muscle was observed. At the

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Spiller and Young, Jour. of Nerv. and Mental Dis., June, 1903, p. 369.

present date the improvement is decided. The gait is nearly normal, and the child can draw up the inner side of the foot almost with normal power.

In some respects this case was an unfavorable one for the operation. The child was too young to appreciate the importance of making voluntary effort to contract the anterior tibial muscle, the mother was not sufficiently intelligent to understand the necessity of bringing the child to the dispensary for regular treatment by massage and electricity, and the long duration of the paralysis made regeneration of the nerve doubtful.

About two months after this operation was done, one of us (Frazier) performed a similar operation in another case of poliomyelitis. The results so far have not been so good as in the case just described, but the child undoubtedly moves its affected limb less awkwardly, and the mother feels convinced that improvement in the gait has occurred. The case is as follows:

History.—J. S., aged 4, was always in good health until two years ago. About this time he was ill for some weeks with pneumonia. Just previous to the pneumonia he suffered from a fall from the hands of his nurse. He had been making some efforts to walk at this time. On recovery from illness his mother says his legs were weak and he was slow in learning to walk. History otherwise negative. An examination of the patient before the operation demonstrated paralysis only in the peroneal group of muscles.

Operation.—Feb. 28, 1903. This consisted in the performance of nerve transplantation in which the musculo-cutaneous nerve was grafted into the anterior tibial nerve.

Result.—The patient was discharged from the hospital on April 5, at which time there was no evidence of any restoration of function in the affected muscles. March 14. Extract from a letter received by Dr. Frazier: "He is getting along pretty well, but his leg seems much thinner and soft, his ankle seems very weak, but in other ways he seems well."

Examination by Drs. Frazier, Spiller and Weisenburg the following week: As far as could be seen there was no material change; that is to say, there was no change in the electrical reactions. The parent of the child seemed to think that he walked a little better and that there was a little less toe drop. This was not manifest to those examining. An infantile palsy brace was ordered for the child.

The operation of nerve transplantation recommended by one of us (Spiller) in these cases was devised in ignorance that any similar attempt had previously been made. It seems, however, that Peckham,[2] in 1900, performed nerve transplantation for the relief of paralysis in anterior poliomyelitis. His operation differed from those described in this paper, in that healthy nerve fibers were cut and united with degenerated nerve fibers. The cases in which this can be done are rare, as the surgeon naturally will hesitate to cut healthy nerves in a limb in which nerve fibers already are paralyzed. In reading the report of Peckham's case, one is struck by the long duration of the paralysis —ten years—and by the rapid restoration of partial function. It is stated that at the end of six weeks the toes could be extended (dorsally flexed) until they were perfectly straight, a motion that had been impossible until after the operation.

DISCUSSION.

DR WHARTON SINKLER, Philadelphia, stated that he considers this one of the important advances which has been made in the treatment of poliomyelitis and he is sure that it is going to obtain a very prominent position in the treatment of cases where there is paralysis of an isolated muscle or group of muscles. It is frequently found that the anterior tibial group remains paralyzed when all the other muscles of the leg have recovered, and this gives rise to the flail foot which is so frequently seen in children suffering from this disease. The usual plans of treatment by electricity, massage and everything else which have been tried, have proved futile and he believes that there is a good field for this operation. He believes that a similar operation has been successfully done a number of times in cases of facial paralysis, that is, anastomosis of the seventh nerve.

DR. ALBERT E. STERNE, Indianapolis, declared that nerve anastomosis is a new thing applied in a practical way in this affection. Experimentally, it was done some years ago, even before the transplantation by tendon suturing had been attempted. Dr. Weiner of Chicago has had a great deal of experience and has reported a number of cases, with excellent results in tendon transplantation for poliomyelitis. Dr. Sterne has done the operation a number of times, not only anteriorly but by taking the posterior tendon and bringing it through between the bones of the lower extremity in late cases of poliomyelitis. Care must be taken that the motor axis be exact. If this operation of nerve suturing can be efficiently done and the results demonstrated, so that nerve implantation will exert the effect of tendon transplantation, it would be the rational thing to do, because the nerve force will establish a practically normal function of the muscles already in existence. In tendon transplantation, on the other hand, to a certain extent, a particular group of muscles is disabled. Nerve implantation leaves all the muscles normal. In the old cases that usually come, unfortunately, after the disease has been in progress and has run its course for several months, or even years, the ordinary methods of massage, electricity, etc., are of little avail. In cases seen at the very beginning of the disease, where the acute manifestations are still present, these methods will meet with as good or better results than any other. When the period of regeneration has not yet begun, or during this period, if treatment is instituted results are far superior. When cases are permitted to go along until the regenerative period comes on, then the same results will not be obtained. Early interference with radical measures of a natural character, such as electricity and massage, are the proper measures, but in the late cases nerve implantation may well be the proper thing to do, if it take the place effectively of tendon transplantation. But even here other mechanical measures should not be neglected, for if they be persistently carried out they accomplish at least an added local nutrition to the wasted extremity and prevent its retardation of growth.

DR. DAVID I. WOLFSTEIN, Cincinnati, considers that early interference in cases of anterior poliomyelitis is an exceedingly illogical procedure, because one would have to know to what extent the cord is diseased and to what extent the muscles are going to atrophy; otherwise, after surgical interference, atrophy might take place at a later date. If it is certain that the nerve to be selected originates from healthy nerve cells, nerve implantation might be the best method, but one can not be certain to what extent the anterior cortical cells are involved. Dr. Wolfstein is not convinced that electric treatment and massage in anterior poliomyelitis ever does much good. Massage does some good. A certain amount of tone is restored to the nervous system that depends on the amount of damage done the cord and the nerves involved.

DR. C. C. HERSMAN, Pittsburg, Pa., declared that, in his opinion, six months would be rather early to operate. He has a case which has been under observation for three and one-half years, in which the use of the arm is slowly returning, which would not be improved by operation, as there are no normal nerves in the arm. For the last year, motion has been returning and the patient has some use of the arm. It is possible that he will eventually use it fairly well, though he will never have a perfect arm, as it is much smaller than the other. This motion returning after two years at least of non-use of the arm, seems to indicate that six months would be too soon to interfere. The return of motion might be attributed to the operation; on the other

2. Providence Med. Journal, January, 1900, p. 5.

hand, if the child became worse, the parents and friends would attribute the worse condition to the early interference, and it would be better to wait twelve months at least.

DR. T. G. WEISENBURG, Philadelphia, stated that the first case mentioned he saw both before and after the operation, and there was a very marked improvement. In the second case the improvement was not so great.

DR. HOWELL T. PERSHING, Denver, Colo., said that while in a disease that leaves such sad results as this one must be on the lookout for every improvement in treatment, it seems that the results of such an operation would have to be very critically examined before one could assign to it any definite value; certainly more than one or two cases would be necessary. Although most of the improvement usually occurs within three months, or at the most within six months, yet occasionally under the use of massage and electricity some improvment occurs in a muscle that has long been out of use, and after such an operation treatment would be apt to be applied with especial care. Dr. Pershing asked how the axis cylinders of the nerve are supposed to act on the muscle. He disapproved of the treatment of all cases of poliomyelitis in the early stages with electricity and massage. In any case of inflammation affecting the nerve centers the indications for rest ought to be observed until the inflammation has completely subsided.

DR. ALBERT E. STERNE, Indianapolis, stated that he sees a large number of these cases and sees them early, and that in those cases where early remedial measures are taken the most excellent results are achieved. It is an absolute error to wait in these cases. No possible damage can be done with ice bags on the spinal column; it is only unfortunate that they exert so little action as they do. They are used in other conditions of inflammation; not to use them here is equivalent to cutting down the wires if the telephone is out of order. Electricity can do no possible harm in these cases seen early after the beginning of the inflammatory process. In these cases active measures do good, and waiting for the process of regeneration is not permissible.

DR. W. G. SPILLER, Philadelphia, stated that they are not at all radical in advocating this method of treatment. They should use it with a great deal of caution, and have said that the cases should be selected. He thinks that neurologists whose attention is directed to the subject will acknowledge that those cases of poliomyelitis in which the paralysis is limited to a small number of muscles are numerous; not a majority, but still numerous. In answer to Dr. Pershing's question, he stated that the subject of regeneration at the present day is a matter of great dispute. A few years ago most neurologists regarded this question as settled, and believed that the axis cylinders grew out from the central stump, and a regeneration from the peripheral portion of the nerve fiber. Later investigators, have shown that the peripheral stump takes part in the regeneration. It is probable that the regeneration which occurs in the peripheral stump is not permanent, unless there is union with the central stump. The method recommended depends on the union of peripheral portions of diseased nerve fibers with healthy nerve cells and their axis cylinders. The period that should elapse before the operation is done is, of course, a matter of uncertainty. The longer the operation is postponed the less likely is it to be successful. It seems that six months would be the proper period; perhaps others may prefer a longer period. When this operation is done after a sufficiently long period, when further restoration of motor power is improbable, it can not in any way injure the child. The muscles have already become paralyzed, and cutting the nerve fibers supplying these muscles can in no way injure the child. The inserting of these diseased nerve fibers into the healthy nerve does not injure the nerve if properly done. Not all cases will be successful, but when the operation is successful decided advantages will have been gained over the method of tendon transplantation, because in tendon transplantation the muscle or muscles that have been diseased are thrown out of function entirely and use other muscles to perform a function which they have not been called on to perform heretofore. Nerve anastomosis restores the function of the paralyzed muscles where it is successful. The operation which Peckham performed in 1900 is remarkable on account of the long duration of the paralysis before the operation was performed and the rapid restoration of power. It differs from the operation here suggested in that healthy nerve fibers were cut and anastomosed with diseased nerve fibers. This Drs. Spiller and Frazier have not proposed, as by this operation, in most cases, one certainly causes paralysis in the region in which these healthy nerve fibers are distributed, and the operation is of very limited utility. Dr. Spiller is in the habit of using massage in poliomyelitis. He believes in all cases of paralysis it is our duty to keep the muscles in as good tone as possible until by natural processes their function is restored. Massage and electricity, he thinks, are useful in all cases of paralysis, especially in cases where recovery may be hoped for by natural means.

INTESTINAL OBSTRUCTION IN CHILDREN.*

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I shall take up in this paper the chief symptomatic factors in intussusception, strangulated hernia, postoperative bands, etc., Meckel's diverticulum, devoting the major portion of my time to intussusception.

INTUSSUSCEPTION.

This disease, barring a few accidental cases, is one that demands prompt surgical interference. Each successive case I see impresses me with the necessity of making operations of urgency in these cases, and of not temporizing with air inflation or water injections. The diagnosis is not difficult, although the symptomatology, as given in former text-books on diseases of children, etc., should be rewritten with a view of placing all stress on blood or bloody mucous stools, and not on the presence of a sausage-shaped tumor.

In over 60 per cent. of a series of 28 cases seen by me, 24 of which I operated on, no tumor of any kind was palpable per rectum or through the abdominal wall. I do not find, on searching my histories, a single acute case in which blood, bloody stool, bloody mucus or bloody serum was not found, either on the diaper, in the commode, or expelled from the anus after digital examination.

Symptoms.—Sudden pain is almost invariably the first symptom that the child manifests, then a degree of shock varying in intensity, and efforts at defecation take place; these are followed by manifestations of spasmodic pains; a peculiar whining cry or fits of crying. In the first hour or two the abdomen is lax, and no marked evidences of pain are produced on palpation; tumor is not felt unless the intussusception is of considerable extent and is taking place rapidly. After a few hours, depending entirely on the degree of obstruction, abdominal distension and evidences of complete obstruction occur. Although some feces and gas may be expelled with the bloody rectal contents mentioned, they are due entirely to the fact that these contents were below the point of obstruction. When a tumor is felt it is not usually the proverbial sausage-shaped tumor of our didactic days, but is more apt to be round or nodulated and moderately movable. Recently, in oper-

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

ating on a subacute case of six days' duration, a tumor was found that in every possible manner simulated a freely floating kidney.

There is invariably an accelerated pulse and an elevation of temperature of from one degree to two degrees and a half. I feel that the temperature noted in the majority of my cases has been due to absorption of some of the decomposed, foul-smelling, bloody rectal contents that were and are present in every case of over six hours' duration. In two instances the symptoms were of a subacute variety and rather puzzling, no blood having been observed in either case, only a little mucus, and in neither was there complete obstruction noted.

Subacute Intussusception.—Case 20.—(Operative Case 19.) Operated on after a period of six days duration with recovery. I am indebted to both Francis and Joseph Huber.

DR. JOSEPH HUBER'S REPORT.

"N. U. was seen for the first time Sunday, Jan. 25, 1903 (the prior history having no bearing on the present illness, is therefore omitted). The child looked well; temperature was 99. He complained of pain in the abdomen; the pain was paroxysmal in character and not localized in any special area. The mother was positive in her statements that the bowels had moved twice daily up to the previous twenty-four hours.

Codein, gr. 1/6 hourly, high injections, and cold or warm applications were advised.

January 26, restless night; temperature 99, same paroxysmal pain, slight resistance of right rectus, bowels moved twice after injections, a. m. and p. m.

January 27, temperature 96.6, condition the same; restless, with pain in paroxysms all night.

At 11:30 a. m. I saw the boy in consultation for the first time.

Examination.—General condition excellent, pulse good, about 80 to the minute; respiration natural and not accelerated; tongue clean, no odor to breath; heart and lungs negative.

Abdomen: both recti tense, no pains in right iliac fossa; palpation negative, as was also examination per rectum; no retention of urine or delay in the urination; no evidence of shock or collapse. The patient insisted on getting out of bed to use the chamber. Between the paroxysmal pains he would play with his toys and took great pride in blowing a fish horn. No blood or mucus in the stools at any time.

Symptoms.—Pain referred to the umbilical region and tenderness in this area were constant. Pressure over McBurney's point negative. Colicky pains, recurring at irregular intervals and severe in type, caused the boy to roll about and cry out. Both recti tense. There was some interference with the functions of the bowels, as they did not act as readily as in health. No urgent symptoms being present, it was decided to await further developments. If no improvement occurred in twenty-four hours an exploratory laparotomy was suggested, the suspicion tending in the direction of a mild inflammation of the appendix.

January 28: Temperature 100, pulse 104; p. m. temperature, 99; restless all night, pains in paroxysms continued. Two good fecal movements followed injections, made by nurse. Dr. John F. Erdmann was now requested to see the patient in consultation, and suggested an early exploratory operation.

January 29: Temperature 99, pulse 110; very restless and in pain all night. Bowels moved well (distinct fecal masses) after injection. The necessary arrangements having been made, the child was sent to Gouverneur Hospital and operated on by Dr. Erdmann at 3:30 p. m.

DR. ERDMANN'S REPORT.

When I first saw the patient, with Dr. Joseph Huber, he had all the manifestations of an appendicitis without any shock. He had had some so-called results from enemata. I suggested to them that the boy be submitted to operation as soon as possible.

Examination.—He was admitted to the hospital the next morning, Jan. 30, 1903, for operation, and when under ether, on abdominal and lumbar palpation no tumor was found in the appendicular region; but on subcostal palpation, a tumor about the size, and absolutely the shape of an infant's kidney was displaced and could be brought down into the right iliac region. This mass would slip back into the loin exactly as a floating kidney would, but it was evident that the tumor was intraperitoneal.

Operation.—The abdomen was opened, with a view of exploration, through the right rectus. Digital examination detected a tumor involving the cecum and colon with a slight portion of the ileum. This tumor proved to be an intussusception, which was readily reduced; the appendix was removed, and the abdomen closed without a drain. The patient made a perfect recovery and was discharged to his home in ten days.

This case, without question, was one of those varieties, subacute in character, no adhesions interfering between the separate layers of the intussusception, in which the bowel was not sufficiently constricted to produce the characteristic discharge or to induce complete obstruction. When I saw the child I spent quite a length of time at the history, with the possibility of an intussusception in view; but at this time all manifestations were those of appendicitis, except the constitutional manifestations due to pus, which one would naturally suspect at the end of five or six days, and I therefore suggested, as above stated, exploratory laparotomy. The question of appendicitis was readily eliminated when the child was under the anesthetic.

Movements of the bowel occurred with mucus, spasmodic pains with intervals of from one-half hour to an hour, a tumor not palpable until anesthetized, and then simulating in size, shape and motility a floating kidney. The condition only demonstrated by exploration.

CASE 28.—(Operative Case 24.) The second case was one of eight days duration in a girl 22 months old, seen on the third day by one of our leading pediatricians. A diagnosis was not made. The case was seen by me on the eighth day, with the following signs and symptoms.

Symptoms.—A history of spasmodic pains, the child getting in the knee-chest position and crying out at intervals of thirty minutes. In the interim the child was either quiet or whining. Mucus was present, but no blood. Movements of the bowels occurred daily, but were due to rectal feeding. There was a movable tumor in the right side, but having no distinct outline. The child was in shock.

A diagnosis of intussusception with subacute symptoms was made.

Operation.—At the operation a gangrenous, irreducible, ileocecal intussusception was found. The appendix and ten inches of the ileum were excised. End to end suture anastomosis was employed. The patient died in six hours.

In this case I was satisfied that an intussusception existed although an appendicular mass had been suspected by the attending physicians.

Spontaneous Reduction.—Case 26.—A short time ago a case was referred to me by Dr. Francis Huber at about 11:30 in the morning. As I was unable to reach the house before 2 o'clock, I sent my nurses and assistants to prepare for operation so that no time should be wasted. On their arrival at 1:30 o'clock, they were told that the child had just had a distinct fecal movement, so that operation would not be necessary. The history of the case is as follows:

History.—Baby, 5 months old; was well up to 6 p. m. of the preceding day, when suddenly it was taken with a rectal discharge of pure blood, followed by vomiting. The mother said the child had agonizing pains, occurring at frequent intervals. When seen by Dr. Francis Huber at 11 o'clock of the following morning, i. e., the morning after the onset, the child was greatly depressed; the abdomen greatly relaxed; no stools since the preceding day; no tumor was palpable externally;

rectal examination was followed by the escape of about one ounce of offensive bloody discharge; no mass to be felt in the rectum or bimanually. The history further showed that an enema had been given some time before midnight, but nothing in the line of injections had been used following this time until the patient was seen by Dr. Huber. He, feeling that the symptoms were so pronouncedly those of intussusception, deemed it unadvisable for further interference other than surgical.

I was then called and ordered all preparation, as above stated, when, at 1:30 I was telephoned of the distinct fecal movement having taken place, and that the child's general condition was that which we see after a reduction of intussusception.

This spontaneous reduction evidently took place somewhere between twelve and fourteen hours after the injection had been used, and followed within an hour after the abdominal and rectal examination made by Dr. Huber. The mother said that from the time of the examination the vomiting and pain ceased, and that between 1 and 1:30 p. m. the bowels began to act.

The after-history of this patient was also typical of the cases we have reduced by operative procedure—that is, there was a foul-smelling, greenish diarrhea, which is almost invariably present, and is due to a superficial necrosis of the mucous membrane. In a comment by Dr. Huber on this case to me later, he said that in view of the history, symptoms and appearance of the baby with its foul enteritis (characteristic), he concluded that this was a fortunate case of spontaneous reduction, feeling that there could be absolutely little doubt on this score. I, personally, feel that this case was reduced largely through the manipulation, abdominal and rectal palpation, which simulated a massage. I certainly do not feel that the enema given about midnight could have had any influence whatever at so remote a time.

In the 28 cases seen by me twenty-four were operated on. One operative treatment was refused. Two are recorded as reduced shortly after the use of large enemata with inversion. One was recorded as a case of spontaneous recovery (see case No. 26) twelve or fourteen hours after injections had been used.

TREATMENT.

Rectal enemas in the first few hours are not productive of harm, but may, though rarely, be followed by reduction. This occurred but three times in the 28 cases seen by me.

Admitted that one meets occasionally with a reduction by the use of enemas, nevertheless this very important fact must be remembered, i. e., that the whole mass may be reduced but the ileocecal junction and one or more inches of the ileum. This being so, all the symptoms clear up for a time. They again return and necessitate operative interference at a time when the conditions of this region are not nearly so favorable to reduction, and may even require excision. This condition was well demonstrated in my sixteenth case, a male child, seven and one-half months old. Duration eight and three-fourths hours, injection used by the father, a well-known pediatrician, Dr. H. M. Silver, and myself was followed by a perfectly tranquil picture, but realizing the possibility of this condition of incomplete reduction, we all felt that the risk of exploration would be far less than that taken by leaving matters rest for farther manifestation. That our fears were not groundless was proved by the evidence of a mass at the cecum, which consisted of almost three inches of the ilium and the entire appendix. Reduction was readily accomplished, the appendix was removed, and recovery followed.

I should, therefore, not feel satisfied that reduction had taken place, even if the child should have no further manifestations of pain, etc., unless this was followed in a short time by a movement of the bowels that we could feel satisfied had come from beyond the supposed site of the previous intussusception; and that in the waiting interval for a movement we should be prepared to proceed at a moment's notice with the operative measures.

The use of enemas previous to operating is offered as a suggestion, and I can say that clinically it is of very valuable asistance, as there is no doubt that the injections reduce a portion of the intussusception, and any agency or procedure that limits operative time must of necessity diminish shock in direct proportion.

Although these little patients bear operative interference quite well, it is quite significant that my greatest mortality rate occurred in those cases which required the longest time for reduction, and that these cases were also the ones of longest duration. Enemas as a means of reduction are not advised after six hours time has elapsed from the first positive symptoms, as, after this period, much valuable time is lost by such procedure.

Anesthetic.—Chloroform has been the anesthetic used in all cases operated on by me, for the theoretical reason, that vomiting may be a causative factor in producing this condition; therefore, the anesthetic that is the least liable to induce postoperative vomiting, which might reproduce the intussusception, should be used unless its danger to life in other ways is greater.

Operation.—The abdomen is prepared as in all emergency operations. The incision is invariably made by me in the middle third of the right rectus, and does not usually exceed two inches in length; the index finger explores the abdomen and then, if the tumor can not be delivered on the abdominal wall or into the incision, the latter is enlarged. Should the tumor be of considerable size, it is advisable, and even necessary, to reduce it in part as it lies in the abdomen, by compressing the distal end of the tumor in the proximal direction, i. e., so that the escaping intussusceptum can be seen or felt escaping toward the cecum in colonic or ileocecal varieties, and toward the duodenum in the enteric variety.

Traction as a means of reduction should never be used except in the lightest possible manner and then only with a view of directing the expulsion of the intussusceptum in its proper course.

Sometimes reduction occurs with a distinct pop; this is seen in the colonic and enteric varieties, but when the ileocecal valve is the part of the mass, great difficulty is often met with in reduction of the final portion. A little patience and gentle compression, aided with a backward and forward motion of the unreduced mass, allied to attempts at reduction and production of the condition is usually followed by success.

Occasionally a blunt instrument introduced between the intussuscipiens and the intussusceptum is of benefit in breaking up any adhesions, and may also be employed to dilate the tonic, contracted intussuscepiens.

When, as reduction proceeds, the tumor advances toward the right iliac region, it is advisable to bring the mass out of the abdomen before finishing the reduction. In each case, twelve in number, that I have operated on since January, 1902, I have removed the appendix before closing the abdominal incision, and in all but two of these the appendix was a portion of the intussusception. My reason for making the incision in the right rectus is due to the fact that the majority of cases

are those invading the cecum and colon, and such being the case, the most frequent site of final reduction is that of the right lower quadrant of the abdomen. Even if the case is one of the sigmoid or enteric variety, this incision can be enlarged sufficiently to approach the most remote parts of the abdomen in children, without subjecting the patient to any danger of a hernia.

In case of inability to reduce the intussusception or when gangrene of the gut exists, excision with end to end anastomosis in the enteric or colonic varieties, and end to side anastomosis in those cases requiring excision of portions of both large and small intestines is necessary. Although occupying a few moments more time, this should be done before a patient is taken from the operating table.

In one case of over five days duration, in a male four months old, I was compelled to excise for gangrene and irreducibility six inches of the ileum and all of the large intestines to within four inches of the rectum, making an anastomosis between the ileum and the lower portion of the sigmoid. Death followed in a few hours.

Before closing the abdomen care should be taken to examine thoroughly the abdominal contents for multiple intussusceptions; the term multiple is used in contradistinction to the terms double, triple, etc., given by Edred M. Corner, M.B.,[1] to those cases in which double, etc., invagination takes place in one intussusception.

After reduction, the abdominal incision is sutured in the usual manner and a very tightly applied abdominal dressing is used.

After-treatment.—The after-treatment is of great importance. Paregoric, in sufficient doses to control peristalsis, is to be administered every three hours; barley water and milk, proportions varying with the child's age, are employed, and a small amount of bismuth, etc., is used.

The first day or two the child may have all the evidences of a foul, putrid enteritis with a temperature of from one-half a degree to two degrees elevation, the latter being thoroughly consistent with primary union in the wound.

My work for the past fourteen months consists of six operations with two deaths. One of these patients was doing nicely for twenty-four hours when he suddenly died. Dr. Francis Huber, to whom I am indebted for the case, was of the opinion that death was due to status lymphaticus. The second case was that cited as Case 28, operative case No. 24, where I excised ten inches of the ileum, etc.

I can not but feel that the citation of the two cases, one of spontaneous reduction several hours after enema, and the one of a subacute variety of over six days' duration with recovery after operation, are of sufficient interest to repay us for the time occupied in recording them in detail.

STRANGULATED HERNIA.

In a recent paper[2] on strangulated hernia in which I reported 58 cases, two were in children under five years. Since reading the paper I have had another, occurring in a male six weeks old, son of a physician. Two occurred on the right side, while the third was on the left. All were inguinals and occurred in males.

The left-sided hernia occurred in an infant not quite 13 days old. The symptoms expressed were those of irritability, crying, restlessness and shock. The protrusion, readily discoverable, is usually found by the mother while giving the child its bath. No differential diagnostic difficulty is experienced in these unless the case be one of atypical Richter hernia as occurred in the patient of 5 years of age. In this case obstruction was evident for several days. A small nodule in the groin, said by the mother to have been there for a considerable time, never varying in size, was taken for an enlarged gland. An abdominal section was made, and the protrusion found to be a small portion of a knuckle of gut (Richter's hernia), strangulated and gangrenous, requiring a resection. The case of a male, aged six weeks, was reduced after manipulation, no operation being necessary.

Since recording the 58 cases of all varieties of strangulated hernia, I have had 7 more, including the child of six weeks, cited above. There were 5 inguinal and 2 femoral, making a total of 65 cases, giving us about .046 per cent. occurring in children under 5 years in strangulated hernia of all varieties. If the inguinal variety alone be considered, and this should be, as I do not know of any strangulations recorded in the literature of femorals, ventrals, etc., in children of this age. I then have 31 previously reported and 5 additional cases in this paper, making a total of 36 cases in my recent practice, of which 3 were in children.

We then find .083 per cent. of all inguinal strangulations occurred in children under 5 years. The treatment in these cases resolves itself into: 1, Reduction, if possible, and in recent cases when the child is under 2 years the use of a properly fitting truss, relying on the possibility of a spontaneous cure. The six-weeks-old child has never had a recurrence in the six months past since reducing the hernia. 2. Operation with radical cure in all irreducible cases and all cases over 2 years, as the chance of spontaneous recovery with truss is relatively infrequent after this period.

POSTOPERATIVE BANDS, ADHESIONS, ETC.

It has fallen to my lot to have 2 cases of obstruction due to the above causes—one in a boy 6 years old after an operation for appendicitis in a Brooklyn hospital, and the other in a boy 10 years old following a drain operation for appendicitis.

Symptoms.—The symptoms of obstruction are the usual ones—constipation, meteorism, singultus, increased pulse, bad facies, temperature, vomiting as time goes on becoming fecal.

These symptoms are readily assigned to their proper source by fact of the history containing evidence of a previous operation. Both of these cases occurred after a period of from five to seven months had elapsed since the time of the original operation. This period of time corresponds to that cited in quite a number of cases reported in the New York Surgical Society, May 11, 1904.

Treatment.—The treatment in the cases occurring early, i. e., in from two to four weeks after operation, consists of elevation of the hips and body, high injections, etc. Should these not accomplish the result desired, operative means must be undertaken.

In cases occurring late, i. e., after from four to six weeks, precious time is lost by any attempt at mechanical relief, and operative procedures should be promptly instituted.

Prophylaxis.—As a means of preventing adhesive obstruction, I deem it essential to have a movement from the bowel of the patient within from twenty-four to thirty-six hours after the operation and one or more

1. Pathology and Classification of Intussusception, Annals of Surgery, 1903.
2. Medical Record, March 12, 1904.

daily after that, and careful watching for not less than three weeks.

MECKEL'S DIVERTICULUM.

These abnormal conditions can produce obstruction in one of three ways, an instance of each one having been reported by me in past years.

First, the diverticulum may become inverted and act as a drag producing an intussusception. Case 2 in my list of intussusceptions.

Second, by strangulation by cords or band-like prolongations; two cases in young adults.

Third, by inflammation simulating appendicitis and producing obstruction either by means of parietal or visceral adhesion of the distal end, thereby forming a loop for strangulation; one case of a young adult reported by me; or by producing a general peritonitis with subsequent obstruction.

Symptoms.—The symptoms of obstruction by Meckel's diverticulum in types two and three are very similar to an appendicitis plus in a day or so a profound obstruction with or without a generalized peritonitis; while in appendicitis obstruction is not evident except in those cases accompanied by general peritonitis or in those exceptionally rare cases where the appendix overlies a portion of the intestine and acts as a band-producing or cord-producing obstruction.

I feel safe in saying that close observation of the literature of this subject will show that the great majority of cases have heretofore been operated on for appendicitis, and the actual condition was only found on exploration.

OBSTRUCTION FROM OTHER CAUSES.

I do not feel that the subject of obstruction in children has had proper attention without considering the obstruction peritonitis seen occasionally in pneumonia cases in which no visible lesion of the appendix or other abdominal viscus is evident. These cases simulate very closely those of intussusception or general peritonitis from appendicitis, and are usually differentiated by the fact that a pneumonia exists; that respirations are increased; that the appearance is of a livid or red-cheek character instead of pale and anxious, as in acute obstruction; temperature is higher than usual in obstruction; that no blood has been passed per rectum; that no mucus is present in the stool; that no mass is found in the right iliac region.

At the same time it must be remembered that a sufficient amount of fluid may be present in the peritoneal cavity to give a sense of fluctuation per rectum. The citation of the following case will impress itself on all: Recently I saw a case with one of our pediatricians for intussusception, in which I made a diagnosis of pneumonic peritonitis.

This patient was about 8 months old, had a lobar pneumonia, and with it a profoundly distended and rigid abdomen, complete obstruction, rapid and feeble pulse, and temperature of 102.5. At the time of the consultation I suggested exploration, although I felt that neither intussusception nor appendicitis was present. On returning in two hours with my assistants I found the child practically moribund, and refused to operate. Death followed in about two hours. Autopsy, abdominal only, revealed a general peritonitis; no other visceral involvement; appendix healthy.

The onset in these pneumonia peritonitis cases resembles an appendicitis, especially if the lower lobe be involved, pain is reflected down into the abdominal wall through the eighth, ninth, tenth and eleventh intercostal nerves, giving us rigidity over the spot seen at times in appendicitis cases.

It must be also admitted that a pneumonia and an appendicitis can occur at the same time. Recently I have seen such a case; fortunately the appendicitis complication became an enclosed abscess, and was successfully operated on after the right lower pneumonia had subsided.

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DISCUSSION.

DR. A. JACOBI, New York City, asked Dr. Erdmann the age limits of the patients on whom he had operated; if he always removed the appendix, and, if so, why.

DR. ISAAC A. ABT, Chicago, believes that all these cases are not due to mechanical obstruction of the bowels; there are cases of paralytic obstruction which deserve consideration. We have all seen examples of complete intestinal obstruction in pneumonia and in the course of severe intestinal infections which proved on autopsy to be paralytic in nature. Two years ago a colleague asked Dr. Abt to see his child. She was suffering from an acute gastrointestinal infection. The child vomited and had loose stools for a time, later on this was followed by a condition of absolute obstruction. There was complete prostration; the face was ashen; the child refused all nourishment; the temperature was normal—at any rate, less than 100—the pulse and respirations were very rapid. The abdomen was enlarged and tympanitic. A surgeon was called in during the night and pronounced the case one of intussusception. He was mistaken, however, as the autopsy a few hours later showed. During the earlier stage of the child's illness the stools had contained no blood; simply large quantities of mucus. The child died, and at the autopsy every inch of the intestine was carefully gone over. It was much distended, but no obstruction was found. The liver was fatty, and on section resembled that found in fat necrosis. Dr. Abt has seen two cases recently that were absolutely similar to this one. The striking features were, first, the symptoms of intestinal infection; then the absolute obstruction of the bowels, the low temperature, the rapid pulse and respiration, the fatty degeneration of liver and other viscera, and death. He believes that these cases belong to a class which has not been sufficiently described in literature, and that they are the result of ptomain poisoning, depending on the ingestion of some kind of poisonous food. He does not believe that such cases of obstruction can be helped by surgical measures.

DR. LOUIS FISCHER, New York City, said that the results that he has seen in operations on children have not been so good as those reported by Dr. Erdmann, and he attributes this to the fact that children do not bear the shock of laparotomy well. He has seen a series of cases in which laparotomy was done, and all the patients died. The fatal result in these cases might be attributable to several causes, one of which was a slow operation and shock. He would like to know whether rapidity of operating is not an important factor, so as to lessen the shock. The following case came under his observation recently. A child, apparently well in the morning, was taken suddenly sick in the afternoon with symptoms of constipation and considerable abdominal distension. In the evening the abdomen was still more distended. He saw the child at 9 o'clock, 12 hours after the first symptoms appeared, pronounced the case one of intestinal obstruction and suggested an operation. The operation was delayed till the following day and resulted fatally. The child was moribund at the time of operation.

DR. S. W. KELLEY, Cleveland, gave it as his opinion that spontaneous reduction occasionally occurs and may take place under the use of opium. If there is any time at which opium is useful in intussusception, it is in the beginning, but it should not be depended on. There are cases in which the use of air or water as a means of reduction is useful, and sometimes it must be adopted as a matter of necessity, as a laparotomy is not always permitted by the parents. The introduc-

tion into the bowel of air or water, when properly done, is sometimes followed by reduction, and Dr. Kelley does not think the method should be altogether dispensed with. Very little is said in regard to the way in which it should be applied, the amount of pressure that should be used, nor the length of time the pressure should be maintained. Dr. Kelley thinks the figures that Morris gave some years ago placed the pressure at 8 or 9 pounds, which appears to be too high. He believes that air pressure is preferable to water pressure in very many cases, but it is so difficult to measure that he finds it succeeds best by using air first and then following it with water, which is more easily handled, and by means of which the air pressure can be measured. He prefers a pressure of four or five pounds, keeping it up for a period of 15, 20 or 25 minutes, and believes that this is more effective than a higher pressure for a shorter time.

DR. SAMUEL MCC. HAMILL, Philadelphia, said that it has been shown that irritation of the rectum produces reversed peristalsis, and this fact may have had some bearing in producing spontaneous reduction in the case reported by Dr. Erdmann.

DR. A. JACOBI, New York City, considers that the phenomenon mentioned by Dr. Hamill would not be of any practical value in the treatment of these cases, because the reverse peristaltic wave would undoubtedly be interrupted at the point of intussusception.

DR. JOHN LOVETT MORSE, Boston, reported that the experience at the Infants' Hospital in Boston is that babies not only bear laparotomy but other severe operations very well, providing they are kept warm during the operation. All the patients who are to undergo an operation are wrapped in cotton and placed on a special operating table, which is kept warm.

DR. JOHN F. ERDMANN said that eight or ten years ago Dr. R. T. Morris produced reversed peristalsis by irritating the rectum by the use of chlorid of soda, to determine what portion of the intestine he was dealing with—whether the afferent or the efferent portion. Dr. Erdmann considers that it is not only time lost, but that it is very apt to prove useless, because the colon and the rectum will not hold the amount of pressure we wish to use. The sphincter will not hold the water in the bowel. With both air and water the danger of producing a rupture of the bowel is very great. If Dr. Kelley could see the difficulty Dr. Erdmann has experienced in reducing an intussusception with the fingers after the abdomen is opened he would never again resort to the introduction of air or water. The coats of the intestine are soggy and edematous, and unless great care is exercised in the reduction, a rupture of the serosa and musculosa will occur. While Dr. Erdmann does not favor the use of injections, he would not object to their use during the first six hours. Among his last six cases there were two deaths. In one, the cause of death was given as status lymphaticus; the other patient died after an extensive resection, with end-to-end anastomosis. There is no question that the more rapid the operation, the less the shock, and the latter is frequently the cause of death. The youngest child he has operated on was 14 or 15 weeks; that patient recovered. Children, as a rule, bear operation well. He has recently operated on 22 cases of appendicitis, all under 5 years of age, with a mortality of 9.9 per cent., and at least 14 of these cases were of the septic type. In the majority of his cases of intussusception, the operation was done within 15 or 20 minutes. If those cases that he operated on were not mechanical, then he does not know what constitutes a mechanical obstruction. An intussusception will occlude the caliber of the gut as completely as a wad of cotton, and even more thoroughly. The paralytic type of obstruction does occur, particularly in pneumonia in children, when there may be a general pneumococcus peritonitis, with paresis of the bowels, and death. The majority of his patients were under 1 year old; two of them were over 5, and the rest under 3. He removed the appendix because it could be done without complicating or lengthening the operation to any extent. He thinks it wise to do so because it prevents the formation of subsequent adhesions and a second abdominal section.

CHOICE OF A TIME OF ELECTION IN MASTOID OPERATIONS.

SOME CONSIDERATIONS ARISING FROM THE DIFFICULTIES OF THE CHOICE—PROSPECTIVE RESULTS.*

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Although voluminous articles, reports and discussions have appeared on the subject of mastoiditis, the mastoid operation and its ultimate results; indeed, experiences so exhaustively detailed that it would seem the searcher after truth might find his way without groping, yet perplexities that defy satisfactory decision so constantly confront the otologist, that I have chosen to place before you some such perplexities as have arisen for me in the recent past; and especially the choice of the proper moment for most advantageous operation.

This paper deals with well-to-do private patients, with whose intelligence it is undoubtedly more difficult to co-operate than in the case of the ordinary grade of dispensary subject. For, adding, in the former instance, to the difficulty and confusion which the conscientious worker experiences at times in his own mind, and at a moment, too, when most he needs to be unhampered in power to decide, there are presented to him by relatives and friends such questions and demands for positive answers that the picture of uncertainty is complete for him. While in the latter instance with the usual dispensary patient, one may follow a more independent and assured attitude, more easily ignoring inconvenient demands for enlightenment on the problems involved until one has arrived at some satisfactory solution of the best course to pursue.

So varied, too, are the final chapters in the histories of these cases, even after the otologist has had freedom in following his best intelligence, that they are at times quite inexplicable to him. Although reports of cases, like statistics, may be made to serve most contradictory ends, and are therefore not so useful as they might be, yet I wish to enforce and illustrate my theme by a few experiences which I will relate as briefly and relevantly as possible.

For the sake of logical discussion I have grouped these cases as follows:

Group 1. Features obtaining in mastoiditis as a complication or a sequel of the exanthemata.

Group 2. Features obtaining in mastoiditis as a complication or a sequel of influenza.

Group 3. Features obtaining in mastoiditis as occurring in the course of chronic suppurative otitis media.

As an object lesson looking toward the more intimate discussion of each of the above-mentioned groups it becomes necessary to study briefly the histories of cases apparently similar, yet with results widely divergent.

REPORTS OF CASES IN GROUP 1.

CASE 1.—Female child, age 6 years. Scarlet fever of severe type of six weeks' duration. Subsidence of all symptoms except slight fever never ranging above 100.5 degrees. Without premonition, many days after apparent convalescence set in, pain began in the right ear.

Examination.—This revealed a highly congested, slightly bulging drum membrane, no sagging of the posterosuperior canal wall, mastoid sensitive to pressure.

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

Treatment.—Free incision of drum membrane was followed by sanious discharge, which continued for ten days, during which time the temperature remained unchanged—99.5 degrees in the morning, 100.5 degrees in the evening—but with subsidence of all pain and mastoid sensitiveness.

Result.—Gradually the discharge from the ear diminished, then ceased, the incision closing, while the temperature remained within the same range for more than two weeks longer, when it at last became normal. Since this time the child has been in fair health, with unimpaired hearing. Frequent examinations were made by her physician during this time, but they failed to reveal signs of any intercurrent affection other than a pronounced anemia.

Observations on Case 1.—The long-continued course of slight fever in this case, almost a month after incision of the drum membrane, aroused constant suspicion of the presence of purulent deposit in the mastoid. Consideration also, of Ponfick's findings of 91 per cent. of the case of autopsy after exanthematous diseases as showing unsuspecting mastoiditis, did not tend toward lessening my apprehension in the study of this case, and he was long in doubt of his wisdom in postponing operation. But though return to health was discouragingly slow, yet in the absence of more decided symptoms, patience prevailed and in the end recovery seems complete.

There still remains, however, this same doubt of the superiority of so conservative a course, and the query still arises were it not better to have opened the mastoid and perhaps removed some slight focus of purulent deposit and hastened this recovery; and when in the course of this case ought this to have been done? Recourse to the bacteriologic examination of the discharge should theoretically help to aid in answering both these questions, but the systemic condition following the exanthemata varies so greatly with regard to vulnerability to bacterial attack, that practically it is extremely doubtful if the bacteriologic findings furnish a safe index for guidance in these cases.

CASE 2.—Male, 5 years old. Scarlet fever of severe type of four weeks' duration.

History.—Desquamation had ceased for ten days, the child was apparently doing well but for a continued elevation of temperature—99 to 100.75 degrees. After this had continued for ten days pain in the right ear began.

Examination.—When examined two days later the drum membrane was reddened and slightly bulging, no sagging of posterosuperior canal wall, nor was there tenderness on pressure over any part of the mastoid.

Treatment and Result.—The drum membrane was freely incised, liberating a moderate quantity of blood and pus. Pain promptly ceased but no fall in temperature occurred. The usual antiseptic treatment was ordered. Discharge of an odorless pus continued for two weeks. Repeated and careful examination failed to reveal other than the aural disease. Notwithstanding an unchanged temperature range the child gained considerably in strength, sat up in bed, later on played around the room, still showing no other symptoms than the slight temperature and the aural discharge. Very gradually the suppuration lessened both in quantity and consistency until only a colorless, mucoid discharge remained. So much improved had the conditions become that only an occasional visit, perhaps twice a week for three weeks, was made, when, without warning or apparent cause, the ear symptoms became suddenly aggravated, moderate ear pain ensued, with slight mastoid tenderness; the discharge was, however, unchanged. A slight though frequent and annoying cough began. The following day all the symptoms were more pronounced, temperature 103.5 degrees. There was now very slight swelling over the mastoid. The morning of the third day the mastoid was swollen and edematous, auricle displaced and immediate preparation made for operation.

Operation.—Immediately on incision a very considerable quantity of foul-smelling discolored pus was evacuated. The sinus leading to the mastoid antrum was readily found, the entire mastoid process was carious, only a curette being used to remove the diseased structure. The carious process had extended to the wall of the lateral sinus, which, owing to its anomalous position almost under the antrum, was perforated by the curette. Profuse hemorrhage indicated its freedom from thrombosis. The ruptured sinus was closed by a Mikulicz dressing and the operation completed. Recovery, with perfect hearing, ensued after two months.

Observations on Case 2.—It is to be observed that Case 2 presents an exactly parallel history with Case 1, in every particular except the former, Case 2, lacked mastoid tenderness. It seems highly improbable that the extensive necrosis found should have occurred in the two or three days preceding operation. Yet the extremely dangerous condition supervened with such apparent rapidity that I can not but believe that the time for most advantageous operation must have passed at some time during the five weeks of stationary temperature. Without, however, any signs except slight discharge, a marked grade of anemia and a moderate temperature, an exploratory mastoidectomy seemed to have been unwarranted.

CASE 3.—Female, age 3. Scarlet fever.

History.—During the desquamative stage acute otitis occurred in the left ear. The drum membrane perforated in two days. When seen, copious discharge was issuing from ear. Treatment only slightly modified the character and quantity of the discharge, yet the patient gained in strength so that she was brought to the office for two weeks for further treatment. Then pain of paroxysmal character began around the ear, temperature 100.5, no change in discharge, no mastoid tenderness at any time. On the fourth day slight edema over mastoid.

Operation.—Operation on sixth day revealed mastoid full of pus, complete necrosis, only curettement being necessary to clear away debris and enter antrum.

Observations on Case 3.—This case is so perfect a counterpart of the other two cases of this group up to the date of aggravated symptoms just preceding operation that there is due its discussion the same pertinent inquiry, ought exploratory mastoid operation to have been done during the weeks in which general improvement seemed in progress, and without other guiding symptoms than slight aural discharge with occasional slight elevation of temperature?

Examples of this group of cases might be multiplied with a quite unvarying symptom-complex, until perhaps, three to six weeks had elapsed in each case; the outcome in some cases being smooth, unexpected recovery in the end; in others, unequivocal demand for undelayed operation following sharply on what seemed a slow but satisfactory course of convalescence.

Bacteriology may in the future furnish the coveted data pointing to the need of operation during these latent intervals, but reinfection by streptococci during an otitis media of several weeks' duration is not only possible, but probable, especially in scarlet fever cases, or indeed in any of the exanthemata. Further, no private patient with the mild symptoms detailed above would permit a disfiguring operation though the presence of streptococci prognosticated eventual surgical interference. With a hospital patient whose time is important and who can have little care at home, the aspect is a totally different one and the bacteriologic examination ought to have due weight in arriving at a decision.

REPORT OF CASES IN GROUP 2.

CASE 1.—A thin, pallid woman aged 41 years.

History.—Had bronchopneumonia following grip, when she was attacked by acute otitis media of unusually severe nature.

Symptoms.—Pain violent and constant. Temperature 102.5 degrees. Drum membrane freely opened, releasing a quantity of sanious discharge. Pain was in nowise modified, radiating over entire side of head and neck, without ceasing. Considerable sensitiveness over mastoid and antrum, especially at tip, and over sternomastoid muscle, for several inches downward. At no time was there any edema or redness over mastoid. Copious discharge through external auditory canal and eustachian tube. Temperature remained 100.7 degrees a. m., to 101 degrees p. m.

Termination of Case.—Operation strongly advised, but positively declined because patient knew of one case of mastoid operation that at the end of one year was still unhealed. Indications were unmistakable for operation, but she persistently refused, and after about ten days recovery began and progressed slowly. There was much deafness and occasional severe pain about the ear and radiating about the head, especially the occiput, evidently indicating a resorptive process in antrum and mastoid cells.

Observations on Case 1.—As will be seen this case gave fairly urgent indications for operation. A recovery of rather an undesirable character seems to be in progress, for a possible operation still faces the patient. There is marked deafness which might have been escaped and the general health is very surely menaced by leaving nature to cope with the infection alone. It presents, however, an illustration of the difficulties of prognosis in cases of mastoid involvement.

CASE 2.—Woman, married, aged 28. Grip of three days' duration; when first seen temperature 101 degrees. Right drum had perforated with copious discharge; left ear acutely inflamed, membrane bulging, great pain.

Treatment and Result.—Membrane promptly incised, followed by profuse discharge of pus. Hot bichlorid irrigations every two hours gave some relief; temperature next day 99 degrees. During that night pain in the left ear recurred persistently. On morning of third day mastoid tenderness and frontal headache. Leiter coil applied for forty-eight hours. Mastoid swelling and tenderness slightly modified, temperature 99 degrees, with violent headache and pain in and around the ear. Discharge from right ear continued profuse, while that from left ear much lessened. No improvement by treatment; patient sent to hospital on fifth day for operation. Here much pus was expectorated, the incision in left drum membrane almost closed and discharge ceased.

Operation.—A diploëtic mastoid antrum was found filled with granulations, surrounding bone softened. Complete subsidence of the severe pain followed the operation; patient left hospital on the fifth day and on the seventh was sitting up, quite well and strong. She is now, at the end of three weeks, completely recovered, with excellent hearing.

Observations on Case 2.—The parallelism of these two cases as well as the contrast between them is so evident that they need little comment. The local and general conditions in each before operation were quite similar, minus the bronchopneumonia in the second case, while the operation undoubtedly changed the picture entirely in Case 2, from a slow, painful, doubtful and unsatisfactory recovery to a prompt and desirable one.

Group 2, unlike the examples in Group 1, offered no difficulty in deciding on the necessity for operation, nor as to the time for this procedure. One prominent feature to be observed in the history of these cases, as well as in that of several others, occurring recently and here unrecorded, and which were by prompt measures aborted, is the very rapid sequence of symptoms which I have noted as characteristic of aural complications of epidemic influenza.

REPORT OF CASES IN GROUP 3.

CASE 1.—Woman, aged 40 years. In poor health, anemic, hysterical, constant headache, which had been attributed to some uterine trouble for which a number of curettements had been done, without result.

History.—Had had suppuration in left ear for several years. Had tried many treatments but without avail. Discharge thick, tenacious; foul odor; carious bone. Pain over mastoid marked though inconstant. Temperature normal.

Treatment.—The case was treated tentatively for three weeks without improvement, and the Schwarze operation was done. Mastoid carious, much pus; the antrum and cells were carefully cleansed, the aditus enlarged, the attic curetted; thorough drainage obtained. Wound healed kindly, absolute cessation of suppuration, complete relief from headache and hysterical state, and health completely restored.

Observations on Case 1.—The severe and unremitting head pain and the hysteria which had been for years ascribed to uterine disease were completely relieved by the removal of the focus of disease within the mastoid. There has been no complaint of uterine disease since restoration to health took place.

CASE 2.—Woman, aged 38 years, in fair physical condition.

History.—For several years prior to her first visit she had had pain over the right mastoid which was considered neuralgia, but without apparent middle ear involvement until an unusual exposure caused severe chilling and cold. Pain then became violent, drum quickly ruptured, profuse purulent discharge without cessation of mastoid pain.

Examination.—When seen at the office, temperature 99 degrees, muscles of neck of right side rigid, profuse discharge from a large perforation in drum membrane, mastoid exquisitely sensitive, hearing reduced to loud voice close to ear; immediate operation.

Operation.—Mastoid carious, antrum very small but filled with pus, aditus unusually large, no necrosis detected in middle ear. Entire mastoid process removed and free drainage through middle ear established.

Result.—On following day temperature 98.5 degrees, stiffness of neck muscles subsided, suppuration entirely ceased, and on third day patient was going about feeling well. Hearing has become almost normal, ear dry, health good.

Observations on Case 2.—From the extensive caries found after a few days of illness, it seems probable mastoiditis was present perhaps for a long time before the exposure which resulted in the exacerbation. However, could the aural surgeon have advised operation with positively no sign to guide him but occasional severe pain of neuralgic character in the mastoid?

CASE 3.—Woman, aged 52 years. Anemic and rapidly losing health and strength.

History.—Has had middle ear suppuration from left ear since ten years of age. Recently the discharge has become very much worse. It would suddenly cease for a day or two, during which time there was intense pain in and around the ear, radiating to the forehead and accompanied with considerable vertigo. These attacks of pain and vertigo became more frequent.

Examination.—When she presented at the office there was a profuse discharge flowing from the ear, of foul odor and thin as water. The superoposterior canal wall was bulging and sensitive; pressure over mastoid painful to only slight degree. No redness nor edema over mastoid. There was no displacement of auricle. Temperature normal. Immediate operation was advised and accepted.

Operation.—The mastoid was very small antero-posteriorly, diploëtic and ivory hard, the antrum almost obliterated and very deeply placed; only a small quantity—a few drops—of pus was found in the antrum, but the surrounding bone was carious down to the inner table of the temporal bone, which was chiseled away until the dura exposed, which was found to

be smooth and healthy. Fully two-thirds of the small mastoid was removed, and this opening was made continuous with the middle ear; thus a modified radical mastoid operation was done. The closure of the wound differed somewhat from that ordinarily employed. The posterior flap was dissected from the skull for about two inches, then drawn forward and stitched to the auricular flap, leaving an opening at its inferior end for drainage, a gauze wick was inserted and removed on the third day, and as the reparative process was satisfactory it was left out and the wound allowed to granulate, which, since there was perfect apposition, it did promptly. Drainage was then secured only through the external canal. This procedure has given me the most satisfactory result.

Result.—There remains absolutely no deformity. At the end of one month the bandage was discarded and the patient resumed her usual duties. The ear is not entirely dry, but the discharge is only serous, slight and odorless.

Observations on Case 3.—The length of time of continuous aural suppuration without ill effect until the sudden exacerbation a few weeks prior to the operation is rather unusual.

It is to be observed also, that there was total absence of fever, mastoid swelling or redness, the diagnosis being made from the sagging posterosuperior canal wall, the pain and the vertigo. It must appear evident, that to have awaited the appearance of the so-called classic symptoms, which should determine the time of election of operation, would have exposed the patient to dangerous complications.

CONCLUSIONS.

In conclusion, it will be a source of helpfulness and gratification not only to me, but undoubtedly to those of the profession who may be interested in the transactions of this Section, if this paper shall elicit a free discussion on its various aspects; and especially would it seem valuable to find a consensus of opinion of this body on the question whether exploratory operation on the mastoid in obscure cases is ever justifiable in the absence of positive indications. While inclined to conservatism regarding exploratory operation on a suspected mastoiditis, I feel that a sin of omission in these cases is a serious one.

Some authorities have striven for definiteness on this subject of an opportune time for operation. It is possible in a condition presenting so varied a symptom-complex as at times does mastoiditis, that an elected time for operation might not be said to be a practical offering to our present wisdom on this subject, but it seems that some nearer approach to a definite rule might be arrived at through discussions of this deliberative body. Others have grounded on this same rock of hesitation and uncertainty, and the transactions of this Section show other requests for discussions that should advance toward the formulation of definite rules on this subject.

As I have indicated, the opinion of the best workers this field, but by these conservatives such varied rules are given as permit a latitude, within which decision may be remarkably perturbing to the surgeon. As in all work the good judgment of the operator must needs play its part, and to no greater extent in other surgical work does accurate and careful observation and deduction make for success than in the varying phases of an acute, supposedly suppurative mastoiditis.

As I have indicated, the opinion of the best workers in this field abroad favors waiting a longer time than it seems safe here to do in many instances, and I am persuaded that the rapidly infected mastoid following the exanthems and influenza here do not obtain in like measure abroad. From a very general survey of this subject, conjoined with my most intelligent prospective and retrospective study of the cases occurring in my work in the past few months, I am led to the conclusion that it is perhaps not possible to fix on a closer definition of the chosen time for operation than may be deduced from the following rules:

1. Delay in operation of cases belonging to the first two groups herein treated, should not be permitted beyond from thirty-six to forty-eight hours, if profuse discharge from the middle ear by incision or rupture, with ice to the mastoid and general antiphlogistic measures do not markedly improve the condition. Even with normal or slightly elevated temperature, if there is edema over the mastoid and sagging of the posterosuperior wall of the external canal, operation should not be delayed, for with what seems to be an improved general state, in the majority of cases operation will eventually be needed.

2. Cases showing infection with streptococci, while at time for days the symptoms lie in abeyance, such cases should not be treated tentatively on appearance of pronounced symptoms of aggravated pain about the ear, fresh rise of temperature, lessened or suppressed discharge from middle ear, but should be operated on without delay in order to prevent the extensive caries which occurs in from two to three days in such infection.

3. In cases of slow, painful recovery, even if promising in the end to be complete, it would be wise to operate after a reasonable period of observation, in order to assist nature in her task.

4. Since this paper deals with private patients who are seen without undue delay, and who have usually had the benefit of good care of a palliative kind, it may be stated that as a rule applying to these cases of chronic otitis media, that the radical operation with its disfiguring results may quite often be replaced by the simple operation conjoined with careful curettage of the middle chamber.

5. Cases of chronic otitis media may be permitted more latitude, if there arise no signs pointing to intracranial involvement. However, if there be present constant otorrhea, neuralgic pains over the part, lowered general health, with nervous irritability, perhaps vertigo, operation should be undertaken after from two to six weeks, if treatment has failed to relieve the condition.

As a last word I wish to disclaim any hope to offer novel material to this interesting and widely discussed subject. I have told my experiences and propounded queries which have confronted me while undergoing these experiences; and have offered rules not exhaustively applicable to all imaginable cases, but serviceable to me in dealing with the groups herein treated; and withal seeking in discussion more light. The various important surgical procedures all have a few characteristic features on which to base unequivocal indications for operation. Independence to the individual operator would undoubtedly be gained through a concurrence of conviction on this theme by the members of the Laryngologic Section of the American Medical Association.

DISCUSSION.

DR. B. A. RANDALL, Philadelphia, referred to the frontiersman's phrase: "If you see sign of Indian, be careful; no sign of Indian, more careful." That is true of disease of the middle ear. The symptoms may be obscure while destruction of a deep-seated character is going on, usually because dense cortical tissue is shutting in the process and its symptoms. If

patients have been made to understand that they have but one chance and they take that chance and recover without operation, one can only tell them they have been extremely fortunate and that it is a consolation to give other patients in the future. Dr. Kuyk will probably hear from that mastoid yet. Frank confession of difficulties in these operations may encourage younger men in their work, showing them that every one must do his best earnestly and conscientiously to make the fewest possible mistakes.

DR. J. F. BARNHILL, Indianapolis, said that, in a considerable number of cases of mastoiditis, in which the mastoid operation should be performed, the condition is almost symptomless, there being present no pain, fever, redness nor swelling. We must take into account the fact that the discharging ear does not show a tendency to dry up, and that in most instances the amount of the flow is out of all proportion to that which could possibly come from suppuration in so small a cavity as the middle ear alone. Since external evidences of mastoid involvement are often wanting, and when present do not always indicate the gravity of the ailment, most thorough otoscopic inspection and examination by every known means becomes an essential. Sagging of the posterior superior meatal wall is, of course, a most valuable indication, but unfortunately is not always present. Politzer says that if there is a pulsating light reflex on the bead or pus which projects through the drum membrane after cleansing the external meatus, and persisting two weeks after its rupture, it is certain evidence of disease of the mastoid cells. Dr. Barnhill does not believe it is ever wise, unless we have more positive evidence than is usual, to say to the patient that the only chance for his recovery is through operation. Patients get well that we thought would die without operation; and if we tell them there are absolutely no chances of recovery, and they afterward fall into the hands of quacks who treat them until such unexpected recovery takes place, they do the profession harm, for they are examples of our failure to foretell the truth. It is wise to spread a greater knowledge of ear diseases. Other surgeons have been more energetic in teaching the public in this respect. When we have a case in hand, we should make explanations, perhaps exhibiting some cuttings. This method has acted as the greatest kind of persuasion to the patient, easily showing that what is commonly regarded as the ear is in reality only one small part of the hearing apparatus, and that when the disease once reaches the cells behind the ear, the drainage is very poor. If the patient sees the relation of the mastoid cells himself, he is much more ready to consent to surgery than he would otherwise be, because it must be clear to anyone who sees the arrangement of the middle ear, mastoid cells and other parts liable to become affected, that surgery is often the only rational means of relief and cure.

DR. D. MCAULIFFE, New York, said that it takes one of great diagnostic ability to determine this question. There is something recognizable in the patient himself which guides a man, more than the local symptoms. The symptom complex generally put down is so rarely met with in the vast majority of cases that we have practically no guide to determine the time of operation. Tenderness from pain depends on the elasticity of the cortex of the mastoid. He finds that temperature is the best guide, and that generally a case will show some slight elevation of temperature after two weeks. Bulging of the posterior wall does not take place unless infection has occurred. If the forward march of the sepsis is not well marked, this bulging will be absent. In mild attacks of mastoiditis there are very few local symptoms, but when they recover without operation the hearing is impaired.

DR. OTTO T. FREER, Chicago, emphasized that bulging of the posterior wall of the external auditory meatus does not always indicate suppuration of the mastoid antrum or cells. These cavities may be intact while a deep subperiosteal abscess may be the cause of the prominence of the posterior wall. There may be enough bulging to entirely close the auditory canal and yet the pus may be situated externally under the periosteum and not in the mastoid cells.

DR. H. E. SMYTH, Bridgeport, Conn., said that the surgeon who is always radical, or the one who is always conservative, has little trouble in deciding when to operate, but the man who endeavors to be radical or conservative, according to the disease in the temporal bone as indicated by external signs, is constantly in a dilemma. The amount of disease is sometimes so at variance with the symptoms that there is marked damage within the bone with little evidence externally to call attention to the fact, and conversely, marked symptoms with little disease.

DR. D. J. MCDONALD, New York City, reported a case and remarked that we are taught now to look out for this condition of hidden sepsis. In every epidemic of measles Dr. McDonald said he inspected the secretions. If we do our work in this thorough manner, we shall be the means of publishing the results of otology to the world.

DR. D. A. KUYK asked if exploratory mastoidectomy in private practice is ever justifiable unless one has a fair proportion of symptoms indicating mastoid trouble and can assert positively the existence of mastoiditis. At what moment in the cases reported would have been the most advantageous time for operation?

DR. E. B. DENCH, New York City, said that he makes no distinction between private practice and any other; if there is any doubt whether to go in or not, he goes in. He would rather see a doubtful mastoid from the inside than from the outside. He explains to the family that an exploratory operation is justifiable and that there is no danger in it. In all cases where he has made this explanation and told the family he might find nothing, he has never failed to find something to justify the operation and to make him sorry he did not operate twenty-four hours before. He spoke of a case twenty-four hours after acute inflammation of the middle ear developed, in which he did myringotomy, and two days afterward opened the mastoid for tenderness and pain. He found pus in the mastoid cells, had a culture made, and it proved to be pure streptococcus. Had it been allowed to continue it would have spread to the deeper structures. When in doubt, operate, with explanations to the patient and family.

TWO CASES OF OBJECTIVE AURAL TINNITUS DUE TO THE ACTION OF TUBO-PALATAL MUSCLES.*

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Subjective noises in the ear, loud, distressing, and of various description, buzzing, ringing, roaring, singing, steaming, whistling, is one of the most familiar symptoms encountered in the practice of otology.

These sounds are sometimes so loud and intense that the afflicted patient is led to think that bystanders can hear them as well as himself, and it not infrequently happens that the physician is asked if he also can not hear the noise which the patient hears so distinctly.

But cognizant of their purely subjective character, the physician usually only laughs at the query.

It is worth while, however, to bear in mind that exceptionally this inquiry on the part of the patient is entirely justified and that if we put our ear close to his, we will discover that the sound, which we thought was heard only subjectively by the patient, may actually be heard objectively by another person.

Two kinds of objectively produced noises are distinguished:

1. Those of vascular origin, generally of a blowing, roaring or buzzing character, synchronous with the

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pulse, and influenced by pressure on the large neighboring blood vessels.

2. Those of muscular origin in which the sound is usually described as clicking, snapping, or ticking, and is likened sometimes to the sound produced by the friction of the edges of two opposing finger-nails, or that of the snapping of the fingers, or the ticking of a clock or telegraph instrument, and even in exceptional instances, to that of the firing of a pistol.

The latter have no connection with the pulse beat, but are isochronous with movements of the palatal muscles, or of the drumhead, or both, and in a number of cases with spasmodic contractions also in the muscles of the face and neck.

Johannes Müller,[1] writing in 1837, seems to have been the first to have recognized the muscular origin of certain objective aural sounds, to all of which he ascribes one method of origin, viz.: Contraction of the tensor tympani muscle.

Schwartz, Lucae,[2] Schappringer, Burkner, Lindet, Wolff and Kayser[3] have reported cases which were thought by these authors to have a similar causation. In 1862, Politzer,[4] and about the same time Luschka, working independently, came each to the conclusion that some cases of this type were to be explained by the action of the tubopalatal muscles, especially the contraction of the tensor palati. A few years later, in 1867, a case was reported by Boeck,[5] in which this author was able to make a postrhinoscopic examination at the time of the production of the sound. The patient presented a spasmodic, up-and-down movement of the larynx, and elevation of the palate accompanying the click, and according to Boeck[5] there could be seen also with each click a drawing forward of the anterior from the posterior wall of the eustachian tube. He considered that this thoroughly demonstrated the Politzer theory of a contraction of the tensor palati. Leudet,[6] in 1869, reported a case in which the clicking sound was accompanied with a movement of the drumhead as well as of the palate; and there was also a simultaneous, spasmodic movement about the eyebrow and in the suprahyoid region.

In 1873, Küpper[7] had a similar case, but without the movements in the drumhead, in which pressure on the tongue would cause the clicking to cease.

These were cases of involuntary clicking in the ear. In 1879, Dr. S M. Burnett[8] of Washington reported a case of voluntary clicking, and the only other case besides Boeck's,[5] so far as I have been able to discover, in which a description is given of the postrhinoscopic appearances at the time of the clicking.

Dr. Burnett's[8] case was also examined postrhinoscopically by Dr. Franck Hyatt, and the result of their examination, in which they agreed, was quite different from the above-mentioned case of Boeck.[6] "During the contractions," writes Burnett, "the anterior wall of the pharyngeal orifice remains stationary, while the posterior is moved obliquely forward and upward across the mouth of the tube, the edge sometimes reaching the anterior border and completely closing it, but usually going only about two-thirds the distance across. The uvula is at the same time drawn upward."

It has been my good fortune to meet with two of the class of objectively perceived clicking in the ears within a short time of one another, representing, respectively, the involuntary and voluntary type, in each of which it was possible to make a very satisfactory examination of the mouth of the eustachian tube during the production of the sound.

CASE 1.—The first case, a young man aged 24, was referred to me Nov. 15, 1903, by Dr. S. M. Burnett, who called my attention to an article in which he had reported the case of a voluntary objective clicking already mentioned. He wished that I should make an investigation of this case, with the view to finding any nose or throat lesion which might be responsible for the disorder.

History.—The patient, apart from his being nervous and anxious about the present affection almost to the point of neurasthenia, presented the appearance of being in good general health. For the past two years he had been subject to a loud clicking sound in both ears, which of late had become louder and more frequent, and very distressing. The clicking, which is likened to the snapping of the finger, occurs generally in quickly succeeding waves of from 10 to 20 at a time, and at the rate of about 60 a minute. The noises are more persistent when the patient is tired and exhausted, while during periods of quiet and restfulness he is nearly free of them. Swallowing or even deep breathing will, however, excite the clicking at any time.

The noise in the ears is always accompanied by an up-and-down movement of the larynx, which keeps exact time with the clicking, and sometimes the larynx movement will be in evidence unaccompanied by the aural sounds.

The patient called attention to two other symptoms which he had noticed. One that when he opens his mouth wide he has a sense of grinding at the point of articulation of the lower jaw, and the other that the act of opening his mouth wide in yawning is accompanied by the ejection of saliva in little jets or spurts.

Examination.—On examination it was found that a distinct clicking or snapping sound could be heard at a distance of about twelve inches from the ear, which was isochronous with the up-and-down movements of the larynx. This sound could also be heard in front of the mouth.

The eardrums were a little retracted, but otherwise appeared normal and did not show any movement. The watch could not be heard farther than half an inch on either side.

On looking into the throat it was seen that the muscles of the pharynx and palate were involved in an almost continuous clonic spasm, which accompanied the up-and-down movement of the larynx and was isochronous with the clicking noise in the ears. The spasm consisted chiefly in a jerky, somewhat violent muscular movement, causing an approach toward the middle of the posterior pillars of the palate, together with a more or less elevation of the palate—similar to the movement which is seen to take place in the act of vomiting.

A view of the nasopharynx showed that the mouth of the eustachian tubes was also involved in these movements in the sense that at each spasm the posterior lower lip moved forward and upward in such a way as to greatly narrow the opening of the tube, and the angle which appears in the image as an approximate right angle, looking forward and formed by the upper and lower part of the eustachian eminence, becomes narrowed into an extremely acute angle, or is entirely obliterated by the elevation of its inferior border.

The posterior extremities of the turbinates were somewhat enlarged, and there was inspissated mucus to be seen in the postnasal space and about the orifice of the tubes.

1. Müller, J.: Manual of Physiology, translated from the German by William Baly, London, 1837, p. 1262.
2. Lucae: Archiv f. Ohrenheilk., Würzburg, 1867, vol. iii, p. 201.
3. Kayser: Verh. der Deutsche. Otolog. Ges., 1895.
4. Politzer: Ueber die willkürlichen Bewegungen des Trommelfells, Wien. Medicinal-Halle, 1862, No. 18.
5. Boeck, O.: Rhinoskopischen Befund bei einem Knackenden Geräusch im Ohr, Arch. f. Ohrenheilk., Würzburg, 1867, vol. ii, p. 203.
6. Leudet, T. E.: Etude d'une variété de bruit objectif de l'oreille, cause par la contraction involontaire du muscle interne du marteau, et coincident avec un tic de quelque rameaux de la brache maxillaire inferieure du nerf de la cinquieme paire compt. rend. Acad. d. Sc., Paris, 1869, vol. lxviii, p. 128.
7. Küpper: Ueber klonische Krämpfe der Schlingmuskeln, Arch. f. Ohrenheilk., Leipsic, 1873, vol. i, p. 296.
8. Burnett, S. M.: Objective Aural Sounds Produced by Voluntary Contraction of the Tubal Muscles, Arch. of Otol., N. Y., 1879, vol. viii, p. 357.

The pharynx presented the picture of the so-called lateral pharyngitis. The tonsils were moderately hypertrophied.

Treatment.—The treatment consisted at first in overcoming these hypertrophic conditions in the nose and throat, with a hope that reflexly they might beneficially influence the muscular contractions. The ears were also politzerized. This line of treatment was absolutely without any effect on the symptoms, although the hearing improved moderately.

Later, under catheterization and the employment of the eustachian bougie, swabbing of the postnasal space, and applications of astringent remedies directed to the eustachian orifice, the conditions appeared to improve slightly.

After the patient had been under observation about two months he left the city. I heard from him once, a few weeks after leaving, stating that the clicking in his ears was better.

CASE 2.—A young lady consulted me in regard to a slight feeling of fullness in the right ear, and a voluntary clicking which she said had existed as far back as she could remember. The sounds could be produced by a movement of the throat similar to that made in the act of yawning. The clicking in this case was not so loud as in the former, but could be distinctly perceived objectively with the ear held four or five inches from the patient's.

Fig. 1.—Cross section of the eustachian tube near its pharyngeal extremity. Represented as in its ordinary state with its walls in apposition, except at the upper part. H. C., hook cartilage; l. m., lamina medialis; t. p., spheno-salpingo-staphylinus muscle (tensor palati); s. p., salpingo-pharyngeus muscle (palato-pharyngeus); l. p., perto-salpingo-staphylinus muscle (levator palati) in cross section.

Examination.—The hearing was normal; the membranes were each slightly opaque, and the right a little retracted; otherwise normal. Nothing abnormal in the condition of the mucous membrane was to be discovered in the examination of the nasal fossa, the postnasal space or the fauces. The contractions which took place in the throat at the time of the production of the clicking were far less violent than those noted in the other case. The movements which were chiefly observed were slight, jerky contractions of the posterior pillars, to which was occasionally added an elevation of the palate, but the latter movement was not at all necessary to the production of the clicking sounds, which were observed to be precisely isochronous, with the contractions of the palatopharyngeus.

Examination of the postnasal space showed no drawing away of the anterior wall from the posterior; there occurred the upward and forward movement of the posterior lip seen in the other case, but this was not a constant accompaniment of the sounds, taking place only when the palate was elevated. The only other movement was a scarcely visible fibrillary twitching of the inferior angle of the orifice at the moment of the contraction of the pillars.

Treatment.—The eustachian bougie was introduced into the tube and a postrhinoscopic examination confirmed the fact of its being in place. This procedure seemed to have little or no influence on the production of the sounds.

Two or three weeks' treatment, consisting chiefly in the use of the catheter, the bougie, or the application of astringents to the mouth of the tube, were unsatisfactory in their results. Sometimes immediately after the treatment the sounds would not be so loud, but this improvement was not permanent.

In both of the cases here related, the conclusion is obvious, that the sounds produced in the ear were due to a contraction of certain muscles of the pharynx and palate connected with the eustachian tubes, in the one case, loud snapping noises heard in both ears and associated with involuntary choreiform movements of the muscles on the outside of the throat as well as inside; in the other, a clicking sound, voluntarily produced, confined to the right side, only audible to the examiner with the ear placed close to that of the patient's or by the use of the stethoscope.

Fig. 2.—Same, showing supposed effect of tensor palati and palato-pharyngeus muscles in dilating the orifice of the tube.

There was in neither case any visible movement of the drum membranes, and the sounds kept perfect time with the contractions observed in the throat. The only question is as to the mechanism which gives rise to the sounds described.

There are three muscles connected with the pharyngeal extremity of the eustachian tube (Fig. 1): 1. The tensor-palati (spheno-salpingo-staphylinus), which is attached to the anterior or fibrous wall of the tube, and whose function it must be to open or dilate the tube by drawing the anterior wall forward (Fig. 2).

2. The levator palati, which lies along the lower part of the posterior or cartilaginous wall, and whose function is disputed, but is generally believed to be that of making the tube more patent by the shortening of its long diameter which results from a contraction of the body of the muscle (Fig. 3).

3. The salpingopharyngeus, a slip which passes from the palatopharyngeus to be inserted into the posterior wall of the tube at its lower extremity. This little muscle is generally overlooked, but is said by some physiologists to take part also in the opening of the tube.

The explanation which Politzer[5] and Luschka have offered contemporaneously, as already mentioned, to account for these snapping noises, is that it is due to the action of the tensor palati drawing the anterior from the posterior lip of the eustachian tube. This explanation has been generally accepted by other authors who have reported cases (Kaufman,[9] Brandeis,[10] Gerould,[11] Goldflam and Meyerson,[12] Schwartze), though the cause has been here and there attributed to contractions of the levator palati.[13]

That the noise is produced by sudden separation of the moist agglutinated walls of the eustachian tube

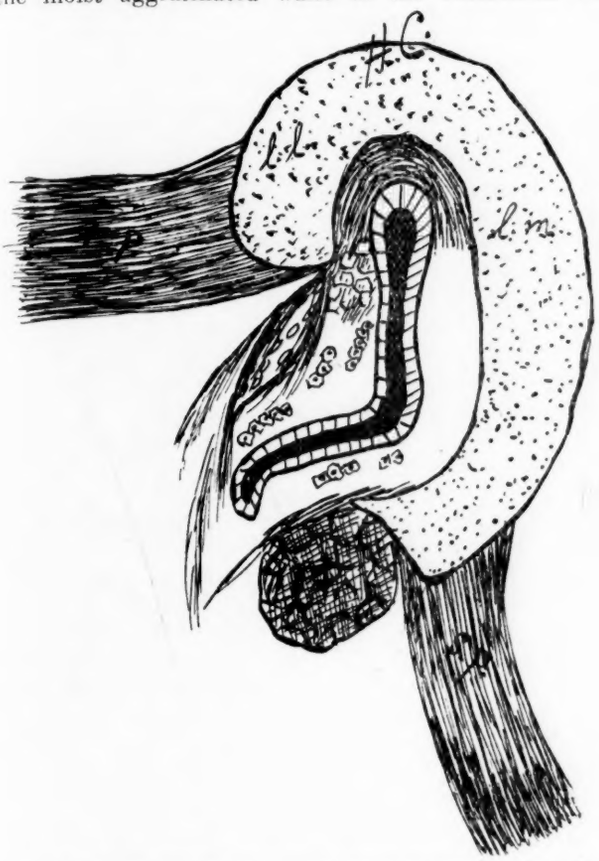

Fig. 3.—Same, illustrating possible effect of levator palati (l. p.), supposing it to have the function of closing the tube—the two other muscles conceded to be dilators.

would seem to be the only satisfactory hypothesis, and while the contraction of the tensor palati may be the chief muscle concerned in the action in some cases, the constant, isochronous contractions of the palatopharyngeus observed in my two cases, in one of which generally unattended with any palatal contraction, would seem to prove that the salpingopharyngeus should also be considered as sharing in the causation of the sounds.

9. Kaufman: Ein Fall von objectiv wahrnehmbarem Ohrgeräusch, Monatsch. f. Ohrenh., Berlin, 1894, vol. xviii, p. 191.

10. Brandeis, R. C.: A Case of Binaural Objective Sounds with Synchronous Movements of the Membrani Tympani and the Palatal Muscles, Arch. Otol., N. Y., 1883, vol. xii, p. 14.

11. Gerould, J. B.: Objective Tinnitus Aurium, Boston Med. and Surg. Jour., 1888, vol. cxviii, p. 123.

12. Goldflam and Meyerson: Wien. Med. Presse, 1895, vol. xxxvi, pp. 641, 691, 728.

13. Szenes: Monatsch. f. Ohrenheilk., 1893, No. 10.

The impression which we gathered from the study of the nasopharynx at the time of the contraction was that the action of the levator palati was rather to close than to open the mouth, as evidenced by the upward and forward movement of the lower posterior lip to the anterior lip, precisely as in the case described by Dr. Burnett.

Instead of all three of the muscles being engaged to open the tube, is it not reasonable to suppose that one of them should have the function of closing it?

If this be so, we may then consider both the tensor palati and the salpingopharyngeus as acting in antagonism to the levator palati, both tending to open the tube, the former by drawing the anterior wall forward, and the latter by pulling the lower part of the inferior wall backward and downward.

The action of either one or both might be concerned in the production of the clicking tinnitus.

The number of cases of clicking tinnitus which has been reported—exclusive of those due to contraction of the tensor tympani—is not large. Cases of the voluntary type have been reported by Lucae,[2] Politzer,[14] Delstance,[15] S. M. Burnett,[8] Orne-Green, Bremen.[16] Cases of involuntary clicking by Kupper,[7] Leudet,[6] C. H. Burnett,[17] Urbantschitch,[18] Mermod.[19] Szenes,[13] Brandeis,[10] while Baker,[20] Shield,[21] Schwager[22] and Kaufman[9] have reported cases of involuntary clicking that were, however, at the same time in a great measure under the control of the patient's will.

ETIOLOGY.

So far as I have been able to make out by review of the literature, neither age, sex nor race have any particular influence in the etiology of the affection.

Many of the cases were spoken of as having a very decided, nervous disposition, and in two or three instances (it may have been merely a coincidence) a history was obtained of a fall or blow on the head. A case reported by Shield[21] had been in earlier life a stammerer.

Urbantschitch's[18] case had formerly been a subject of general chorea, and he looked on the contraction of the throat muscles as a sort of choreic manifestation.

In several cases the patient presented spasmodic movement of other muscles than those of the palate or pharynx. In Kupper's[7] case, there took place an elevation of the root of the tongue and a contraction of the muscles about the mouth; in Leudet's[7] case, there was a spasm of the eyebrow and of the mylohyoid and digastric muscles; in Boek's[5] case, an up-and-down movement of the larynx, as was observed in the case reported here.

TREATMENT.

So far as treatment is concerned, no deduction of

14. Politzer: Ueber willkürlichen contractionen des Musculus tensor tympani, Arch. f. Ohrenheilk., 1869, vol. iv, p. 19; 1868, No. 4, p. 19.

15. Delstanche: Etude sur le bourdonnement de l'oreille, Paris, 1872, p. 47.

16. Bremer: Ein Fall von objectiv wahrnehmbaren Ohrgeräuschen, Monatsch. f. Ohrenheilk., Berlin, 1879, vol. x, p. 139.

17. Burnett, C. H.: An Objective Noise in the Ear Accompanied by Spasmodic Retraction of the Membrana Tympani and of the Velum Palati, Phil. Med. Times, 1874-5, vol. v, p. 306.

18. Urbantschitsch: Handbuch der Ohrenheilkunde, Herausg. v. Schwartze, p. 413.

19. Mermod: Des bourdonnements d'oreille perceptible à distance, Rev. Internat. de Rhinol., Otol, et Laryngol., Paris, 1894, vol. iv, p. 61.

20. Baker, A. R.: A Case of Objective Noise in Both Ears, Arch. of Otol., 1884, vol. xiii, p. 293.

21. Shield, A. M.: Pulsating or Clicking Tinnitus, Clin. Jour., London, 1896-7, vol. viii, p. 393.

22. Schwager: Ein Fall von objectiv wahrnehmbarem Ohrgeräusch, Monatschr. f. Ohrenheilk., Berlin, 1896, vol. xxx, p. 58.

any value can be drawn from the literature of the subject.

The administration of nervines and tonic remedies, change of air, sea voyage, the discontinuance of any confining or strenuous occupation, the treatment of any possibly existing nose or throat lesions, and a few other such usual commonplaces predicated on general principles have been advised by those who have written on the subject, and if the indication exists, one will, of course, not neglect such remedies; but, after all, it has to be admitted with regard to the objective form of tinnitus, as with the subjective, its prognosis is bad, and its treatment unsatisfactory.

DISCUSSION.

DR. W. S. BRYANT, New York City, said that all cases of tinnitus with the muscular basis have an important neurotic element which is responsible for keeping up the symptoms. A certain per cent. of these cases have impaired action of the pharyngeal muscles resulting in some unusual symptom which the patients brood over. As long as their minds are fixed on this, it is almost impossible to get a cure unless their hypochondriachal attitude can be changed. Local treatment does no good unless the mental attitude is changed at the same time. Very good results are obtained from the use of electricity in the neighboring regions, which probably helped the muscles and nervous mechanism. At any rate it pleases the patients and gives them confidence in the physician.

DR. C. R. HOLMES, Cincinnati, said that he had had but one typical case several years ago, where there was a clicking audible at a distance of several feet. He examined the case carefully with the mirror and each click was associated with a rhythmic contraction of the drum. The patient was under observation for a week or ten days for some other trouble and he called in a number of his colleagues to see it. The clicking was intermittent and would come on after nervous excitement or after eating a heavy meal, lasting from a few minutes to an hour or two.

OSMOLOGY AND PHARMACODYNAMICS.*

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Osmology is usually defined as the science treating of the osmotic states of the body fluids. However, as the osmotic processes in a liquid in a great measure reflect also its other physical conditions, this fact should be embraced in an adequate definition. Osmology, hence, may be spoken of as the knowledge concerning the physical conditions of and in the body fluids. This broader conception is adhered to throughout this paper.

The health of an organism depends on the existence and maintenance of its osmotic equilibrium. By osmotic equilibrium I understand that inter-relation of the physical conditions of the various body fluids—molecular concentration, osmotic concentration,[1] tension and dissociation—which is essential for the normal performance of the vital processes. This inter-relation does not consist in the equality, but in the physiologic dissimilarity of the osmotic conditions in the different fluids. In certain pathologic states, the fluids in the organism tend to equimolecular or equiosmotic concentration; the normal processes of life, however, are possible only so long as this uniformity is not established.[2]

It is the special office of the organs of secretion and excretion to maintain the osmotic equilibrium. A structural alteration of one or more of these organs, causing functional impairment, is liable to result in serious disturbance of the osmotic equilibrium. The functional impairment of such an organ is demonstrable by the altered osmotic tension of its secretion or excretion, which again may be an indication of the modified osmotic conditions in the blood. Normally, the secreting organs withdraw from the blood a certain amount of water in which are dissolved specifically proportionate quantities of inorganic and organic salts. The diseased emunctory is unable to cope with the secretion work, the absolute amount of water and salts withdrawn by it from blood and tissues falls short of that which it eliminates when functionating properly. Furthermore, the amount of water and solids secreted or excreted by a diseased organ may be in disproportion, that is, while the absolute amounts of both are diminished, the relative water or salt output may be still further reduced. The disturbance of the osmotic equilibrium between the body fluids and between the blood and the secretion or excretion progresses or regresses as a rule at the same rate as the structural changes in the parenchymatous tissues increase or subside.[3]

While the intrasystemic osmotic disturbances may be but rarely determinable by our present clinical means, the disturbed osmotic equilibrium between blood and secretion is soon demonstrated by simple physical methods. The degree of osmotic disequilibrium between blood and secretion is both an indicator of the intensity and the course of the pathologic process in the parenchymatous structures as well as of the influence of the therapeutic measure exerted on it. If there is a tendency to restoration of the osmotic balance, that is, if the insufficiency of the organ is gradually giving way to physiologic activity, the plan of treatment should be further pursued. If, on the other hand, improvement does not ensue after a protracted period, or if equilibration becomes still more distant, the therapeutic measures, as maintained by Zikel[4] should be at once replaced by more rational ones.

Pharmacologic action is not of an exclusive chemical nature. This fact, although not pronounced in so many words, was already recognized by Schmiedeberg[5] when he says that the molecular processes, as distinguished from those occurring between the atoms, should be taken into consideration when defining "chemical action." Further proof of his conception of "physical action" is furnished by his explanation of the non-toxic action of distilled water after its ingestion.

It is not often possible to distinguish between chemical and physical action; where the one ceases and the other begins is indistinguishable in almost every instance. We may assume even that the action of a great number of substances on the living cells is both of a chemical

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* Read in the Section on Pharmacology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. While "molecular concentration" indicates the number of moles (gram-molecules) contained in a liter of fluid irrespective of an eventual dissociation, "osmotic concentration" as suggested by Hamburger (Osmostischer Druck und Ionenlehre, 1902) is the expression of that concentration indicating the total amount of molecules + ions contained in a liter of the physiologic or pathologic fluid.

2. Complete uniformity of all partial osmotic tensions supervenes at no time and nowhere in the organism. Such uniformity would result in the cessation of the tissue currents, but there is absolute proof that such cessation can never occur: in the dead human organism even these constant currents may be yet demonstrated. (Zikel.)

3. In certain phases of degenerative processes the insufficiency of an organ may yet for some time be averted by its unaffected cells; in case even that an organ has entirely ceased to functionate, another organ or set of organs may display vicarious activity, so that for the time being osmotic disturbances either do not ensue at all or are kept at a minimum.

4. Zikel: Klinische Osmologie, 1902.

5. Schmiedeberg: Grundriss der Arzneimittellehre, 1883.

and physical nature. Purely chemical or purely physical action is exhibited by comparatively few remedial agents. In so far, however, as one or the other mode of action predominates, we may differentiate between substances acting chemically and such that will display physical activity.

Again, pharmacologic action is determined by the constitution of the cells or cell-complex reacted on. Thus, a substance may not cause any reaction in the protoplasmic molecule—it may neither stimulate nor depress; or it may influence cellular function by calling forth chemical alterations of the cellular material, the specific composition of which invited chemical reaction; or it may modify tissue function by changing the molecular constitution of the intracellular or extracellular fluids. Whatever the mode of the action of a substance on living protoplasm may be its influence is one of a modifier only, that is, it may excite and increase or reduce and suppress functional activity, but it does not occasion any new function.

Ever since the advent of solidar pathology and the doctrines originating therefrom, the chemical nature of pharmacologic action was the one principally studied. Although the laws of endosmosis and exosmosis were known then, but few pharmacologists devoted sufficient attention to the physical side of pharmacologic action. And yet, the physical action of drugs, the salt action in the more limited sense, is so much simpler, is so much easier of comprehension than the complicated, only to the most rudimentary degree understood chemical drug action. I can not offer an explanation for this historical phenomenon, but it occurs to me that much could have been accomplished in the physical domain of pharmacology even before the rise of Van't Hoff, Arrhenius and Korányi.

By physical pharmacologic action I understand that influence which is exerted on the living cell by directly modifying the molecular constitution of the intracellular or extracellular fluids without synchronous alteration of the chemical structure of the protoplasm.

In the same sense in which osmology is the science treating of the physical conditions of and in the body fluids, osmotherapy is that mode of treatment, the ultimate aim of which is re-establishment of the normal physical conditions, the osmotic equilibrium. In its last instance, osmotherapy regulates the electrical conditions in the body fluids. Osmotherapy produces physical stimulation or depression by withdrawing, supplying or dissociating molecules; physical stimulation, again, is a mediate result of increased physical depression, that of diminished electrical conductivity of the intercellular or intracellular fluids.[6]

The remedial agents whose foremost action is the physical one, I designate as "equilibrants." They may be divided into four great classes:

1. Agents exerting specific localized activity; agents influencing the secretory and excretory functions of the diseased organ by transitory or permanent restoration of normal semi-permeability.

2. Agents regulating the perverted osmotic conditions of a certain body fluid, or maintaining a general osmotic equilibrium for the time being.

3. Agents whose principal action depends on their ions; agents which influence the electrical conditions in the system.

4. Agents with combined action; agents exhibiting any two or all three actions enumerated.

These equilibrants are all recognized therapeutic agents; each group has had its representatives in the armamentarium of the practitioner who, guided by a higher or lower degree of empiricism, only vaguely understanding their pharmacologic action, has virtually always employed them.

Under equilibrants with specific localized action I comprise those agents which in the face of impaired permeability of an organ, without being absorbed or, if so, without producing important systemic effects, cause it to functionate more or less normally. Stimulating the secretory or excretory activity without entering into or changing the chemical constitution of the irritated cells and not withdrawing by its own mediate action the components of the secretion or excretion from the blood, the paramount effect of these agents seems to be exerted on the impaired semi-permeability. The outpouring of the secretions following the administration of these substances is considered to be due to stimulation of the sympathetic, or to some other, mostly nervous cause. This may be true; still, the drug action has to be looked on as a purely physical one, as all elements of the secreting cells touched by the drug are more or less affected at the same time; as in certain cases the application of drugs tends to permanent improvement of the secreting power, and as artificial irritation is in vain unless all conditions essential to the secretory process are fulfilled. Moreover, if a secreting organ is in an atrophying state, its nerves also share in the degenerating process.

Among the equilibrants belonging to this group are the stomachics of condimental nature. This administration of a preparation of *Zingiber officinale*, for instance, in a case of chronic gastric blennosis of the second or of the beginning third degree frequently causes correction or augmentation of the gastric juice; it tends to equilibrize the osmotic conditions between the blood and the gastric secretion which is proved by the augmented production of hydrochloric acid, or by the latter's occasional production *de novo*. The formation of hydrochloric acid depends on the improved permeability of the glandular membrane.[7] Medicaments of similar local action, irrespective of synchronous ganglionic irritation, I count among remedial agents whose paramount pharmacologic action is a physical one.

Agents regulating the altered osmotic conditions in a body fluid are the equilibrants *par excellence*. Such agents are water and salts. They mainly differ from the equilibrants with specific localized action in the fact that they themselves furnish the material by which the osmotic conditions are directly influenced.

The employment of the equilibrants of this group should be based on a minute study of the osmologic disease factors. It is not the introduction *per se* of the equilibrant by which the osmotic conditions are corrected. This is accomplished by the quantity of the equilibrant conforming exactly to the functional change. If, for instance, the pathologic, cryoscopically ascer-

6. I do not consider the non-dissociated molecules of the same importance as the ions, between which the reactions occur with greater ease and rapidity than between the former. The majority of the physical pharmacologic reactions very likely occur between the ions.

7. Gastric hydrochloric acid does not originate in the glandular cell, but in the glandular membrane. This, a semi-permeable membrane, is impervious to free chlorin ions, but permeable to the hydrogen ions, coming from the blood. A certain secretory irritation is essential for the production of hydrochloric acid. This irritation is called forth by the presence of free chlorin ions on the inner side of the gastric membrane. Stomachics, like those aforementioned, create conditions facilitating the passage of chlorin ions to the inner side of the gastric membrane.

tained, osmotic pressure of a body fluid be subnormal to a certain degree, and if the deficiency is to be corrected by sodium chlorid, exactly the amounts of sodium chlorid necessary for the correction of the osmotic pressure are to be injected. Too little of the sodium chlorid may not effect any material alteration of the condition, too much of this salt may be followed by untoward phenomena.

The performance of cryoscopy is indispensable, when equilibrants of this category are to be employed. By its aid we are enabled to determine the osmotic alteration of the body fluid, the osmotherapeutic correction for its restoration, and the specific equilibrizing value of every osmotherapeutic agent.

The specific equilibrizing value of an equilibrant consists in the faculty of modifying a pathologic condition or a symptom by means of its purely physical properties, as molecular weight, dissociation and concentration.

In case two or more equilibrants are used in combination or alternately the osmotic partial pressure of each has to be taken into consideration.[8] According to Zikel[2] the concentrations of two specific injection-osmo remedies must be like the products from their molecular weights and the mutual dissociating coefficients.

Besides, the influence exerted by these equilibrants on the osmotic conditions *per se,* their dissociated parts, the ions, which are the conductors of electricity, may alter the electrical conditions in the organism. While there is no doubt that the mediate and individual action of the ions is of a chemical nature, their ability to conduct electricity is a purely physical property. The ions are conductors of ectogenous as well as of endogenous currents of electricity. Their ability to conduct the intrasystemically generated electricity stamps them as one of the most potent factors in the vital processes. It is evident that, if ionization is deficient, or if the electrolytes are interfered with by non-conductors,[9] the electrical conductivity of the body fluids, as I have shown elsewhere, will be diminished or entirely suspended. Among the equilibrants, hypotonic salt-solutions (or water) are often the most important, as first pointed out by me.[10]

Among the equilibrants with combined action, distilled water, under certain conditions, stands at the first place. In cases of hypochlorhydria, on the basis of chronic gastric catarrh, occurring together with renal insufficiency, for instance, distilled water acts primarily as an irritant, casting off the degenerated epithelium and establishing a more normal state of partly permeability of the gastric membrane. Subsequently, when lodged in the intestines, it exhibits its other equilibrizing qualities by withdrawing salts from the organism, by diminishing molecular concentration of the serum and by permitting or effecting increased ionization.

Osmotherapy is as yet in its very infancy. Of its rationale—if the premises, the theories of osmosis and dissociation be well founded—there is not the shadow of a doubt. But how well are these conceptions founded? Do we not conceive of Nature and her forces a little differently every few years? Will these conceptions endure sufficiently long to impress their mark on all the branches of medicine, as the bacteria have done?

I have briefly sketched the relation of osmology to pharmacodynamics in the light in which I see it. The picture, I know, is incomplete, and, perhaps, too tersely drawn in some respects. Succinctness, however, was compulsory on this occasion.

8. Osmotic partial pressure is the osmotic pressure of an individual dissolved substance in a solution of mixed substances. The osmotic pressure of a dissolved substance mixture is equal to the sum of the partial pressures of the individual substances.

9. Stern: A Contribution to the Pathogenesis of the Uremic State; the Probability of Its Physico-Electric Substratum, Med. Rec., Jan. 24, 1903.

10. Some Points Pertaining to the Therapeutic Management of the Uremic State, Amer. Med., May 2, 1903; Trans. of the Med. Soc. of the State of New York, 1903.

SOME PROBLEMS OF PRESBYOPIA.*

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When I began practice I did as I had been taught regarding the correction of presbyopia. Text-books, teachers, and general custom agreed that presbyopia began sometime after forty, and that no mydriatic was needed in such patients. There was a rough rule wandering about that plus spherical lenses of one diopter were needed in forty-five-year-old patients, twos at fifty, threes at sixty. This was about the time of the "Punch, Brother, Punch with care, a blue slip ticket for a five-cent fare, etc." Actual dealing with presbyopic patients soon brought me up sharp. Rules like those of the street car conductors would not work out in the oculist's office. If any rules at all were admissible they had to be of a different kind from those of the text-books; in some ways far more definite, in others more indefinite. Some of these cautions I have brought to clearness are as follows:

1. In oncoming and progressive presbyopia, cycloplegia is generally necessary to obtain the static refraction on which the presbyopic correction is based.

Precisely in eyes whose accommodation powers is being narrowed and lessened is the mydriatic most needed in order that eyestrain may not be increased by the close limits in which function is being compressed. When there is youth and a high range of accommodation the refractive error may not produce the injury taking place in the presbyopic. This is a truth so self-evident that it is astonishing to find it utterly ignored in Europe and too commonly ignored in our country.

The slightest misplacing of the axis of astigmatism, the failure to get the accurate amount of the error of refraction, the least imprecision in correcting the slight anisometropia, insure more trouble in the presbyopically lamed eyes than in others with plasticity and with activity of neutralizing or compensating powers. If there are symptoms of eyestrain, and especially if accompanied with any doubts in my mind as to accuracy, I do not hesitate to use a mydriatic up to the ages of fifty-five or sixty. I think almost all patients up to fifty should have it. I mean homatropin and cocain, and instilled in the office.

Discrimination as to those with latent or manifest glaucomic tendencies is, of course, demanded. The individual expertness of the oculist must also be considered. The art of refraction requires a skill, a judgment and a delicacy of perception, as great and rare as in any other calling, greater, I believe, than in surgical or inflammatory conditions. A highly exceptional mastery of the art may succeed in estimating the error of refraction without a mydriatic when others would fail. None may safely lay claim to such ability. None, at least, may safely trust himself in its habitual employment. Easy going assumption of it is another phasing

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of the characteristics which have duped us since proverbs and folk-tales and the ophthalmometter were invented.

2. The age at which presbyopic correction should first be given depends on the pre-existing refractive error.

The old rules as to forty-five, etc., are nonsense. If the patient has two diopters of hyperopia, the presbyopic correction will be needed much earlier than if he is emmetropic. If he has myopia, the necessity will arise later, as is well understood. But astigmatism creates a greater indefiniteness, and especially if it is unequal, or if unsymmetric. Anisometropia further complicates all rules and makes them still more indefinite. The onset of troublesome presbyopia also depends on whether the ametropia has been corrected or not for years previous.

3. The correction of the presbyopic error of one or both eyes is often dependent on the existence in one eye of amblyopia from disuse.

This exclusion of one eye from function always brings most difficult problems. If of high degree and of long standing it may not be possible to get reaction or to stimulate the lost power into function. As a rule I believe in saving partially ruined eyes, and it is possible to do so more often than has been supposed. Such eyes exist far more frequently than text books and teachers tell us about. In some rare cases at the presbyopic age the attempt to save the eye and bring it into function is not only possible, but will produce most decided rebellion on the part of eye and brain. These "hurt eyes," with stippled maculas which let you stare at them, and which so plainly show neglect and sin, both lay and medical, are daily visitors to the oculist's office, and they make his hair gray sooner than should be.

4. Less accommodation in one eye than in the other may condition the amount of the presbyopic correction.

This inequality of function may be the result of anisometropia, of right-eyedness or left-eyedness, of a peculiarity of occupation, of monocular disease or injury, of heterophoria, etc. It is of more frequency than is suspected, and causes much ill-success in the correction of presbyopia.

5. The onset of presbyopia demanding correction may be delayed beyond the usual age by hypertrophied accommodation.

This abnormalism of excessive accommodation is the result of lack of presbyopic lenses, with the resultant over-function of the ciliary muscle and abnormally retained elasticity of the lens. Excessive use of any organ, or abnormally prolonged use, produces disease. That of the accommodation in presbyopia causes eyestrain and all of its reflexes. The eye itself or the organs which bear the brunt of the derouted reflexes must suffer. I have heard of one oculist who attempted for many years to postpone presbyopia requiring correction into old age. That is a human vivisection experiment that would be somewhat interesting to science, but which I should be far from wishing to try in my own case. We see daily the injury and the suffering it causes in old people who indulge in the puerile vanity of ability to "read without glasses." The result is that they do not read much, their little intellect goes to seed, and the little reading they do produces disease.

6. The correction of presbyopia at an early or late age, and the high or low degree of the error depends on the amount of near work demanded of the eyes.

In nonreading farmers, workmen, seamen, etc., the correction is not required to be made at so early an age, nor perhaps in so high a degree as in sewingwomen, literary people, engravers, etc. A hurried test may also result in a too low correction, because the accommodation by a moment's intense effort may prefer a lower lens than would be required in more prolonged use of the eyes at near range.

7. Presbyopes who deceive the oculist as to their age may suffer if he has not been alert minded to detect the error.

One must be on his guard in treating "women of doubtful age."

8. The peculiarity of the habitual occupation may necessitate a higher and earlier correction than is usual.

Embroidering, "sewing on black," engraving, watchmaking, measuring in sixty-fourths of an inch, etc., are kinds of employment that make inordinate demands on the accommodation.

9. The light, its quality, power, etc., must also be inquired into.

If a patient works all day by artificial light, or by poor daylight, in darkened rooms, if the angle at which even a good light strikes the work is not right, eyestrain is sure to result. If after a long day of strain, under these hurtful conditions, reading, sewing, etc., are continued at home, and again perhaps, with bad lights, the results must be deplorable.

10. The position of the body and head in sewing, reading, or other near work, may be harmful to the eyes and the general health.

If the book, sewing material, writing, etc., is placed in the lap, or in such a position that the head is bent over, the spine curved, and the chest flattened, the injury to the patient's eyes is almost certain because of nonillumination of the page, paper, etc., and also because of the improper position of the eyes and head. The health generally must be harmed by the compressed condition of the pelvic organs and the lungs, poor respiration, etc.

Bookkeepers, etc., should stand at their work as much as they may, and chairs at desks should be low, the desk high, the writing leaf inclined, the axis of vision as nearly as may be perpendicular to the plane of work and of the spectacle lenses. The single disadvantage of the bifocal lenses is that they compel the axis of vision to be inclined downward. For this reason they should be set high before the eyes, and the habit advised of "chin-up." Book rests, book holders, etc., should be encouraged. In my boyhood "sewing-birds" screwed to tables were common. They were most excellent devices.

11. The state of the general health, the preserved vitality, the vigor of will and of body, will also condition the early or high correction.

A flaccid muscular tone, anemia, denutrition, care and worry, a melancholic or pessimistic disposition or philosophy of life, may not be entirely overlooked. Patients so handicapped require a fuller or earlier presbyopic correction than those who are more vigorous. Their innervational power is lessened and sometimes nothing the oculist can do will enable them to carry on severe near work when presbyopia doubles their strain.

12. Failure to cure the reflexes of eyestrain may be due to the want of bifocals.

Two separate pairs of lenses can not correct eyestrain as do the double lenses. With a distant pair only, there is an hour or more of strain every day in eating meals. There is also forgetfulness to change or indifference to the need of it, lenses are not repaired, are misplaced or lost, etc. The one disadvantage of bifocal lenses is counterbalanced a hundred times by the manifest benefits over the distant and near glasses made separate.

13. Eyeglasses being more prone to maladjustment than spectacles may be the cause of failure to bring relief of the symptoms or sequels of presbyopic eyestrain.

There are few noses capable of retaining bifocal eyeglasses in a correct position. The more expert the optician the more the attempt may be tried. This is especially true if the patient can consult the fitter at least once a month. Patients who by reason of living at a distance can not do so should not be allowed bifocal eyeglasses under any circumstances. To those with high degrees of astigmatism they must also be forbidden, except for one nose in ten thousand. Vanity causes a deal of suffering both to patient and oculist. It may prevent the patient wearing any glasses, and thus double the local and systemic reflexes. When, as usual, vanity demands eyeglasses, and the result is certain to prove bad, my custom is to tell the patient to consult another oculist. No greater ill fortune could happen to your rival than to have the patient go to him! And there is no better punishment for vanity than eyeglasses, unless it be the rest cure.

14. Premature presbyopia, or paresis of the accommodation, may occur years before the usual age, and explain failure to relieve symptoms when none of the preceding causes will do so.

The patient may have contracted a chronic habit of reading at too great a distance, and the presbyopic lenses ordered may force him to hold the page or sit at writing at a shorter distance than is comfortable or perhaps best.

This is especially true if there is exophoria or insufficient adduction power. If this is so, the adduction should be increased until comfort is secured, habitual reading or writing at, say, 20 inches may itself be a source of eyestrain.

16. The patient may have supernormal adduction power and the presbyopic lenses ordered may force him to read or write at too short a distance.

In this case, at least until the adduction lessens, the too weak lenses may cause discomfort.

17. The symptoms may not be due to presbyopia, nor to any eyestrain, but to systemic disease.

Every oculist has had many patients whose symptoms had been treated by glasses alone, or whose ocular muscles had been "clipped," when all the time there was concealed or unknown systemic disease, e. g., nephritis, diabetes, anemia, etc., or some morbid result of bad dietetic or other habits, which were the only or chief causes of trouble. This does not in the least excuse those wonderful oculists who find that all eyestrain symptoms and reflexes are due to systemic conditions. That is a good way to please the referer of cases, and to conceal inaccurate refraction. But it is not the best way to practice ophthalmology.

The preceding rules are, in fact, non-rules; they are in truth, cautions to have no rules in correcting presbyopia. Every case is exceptional and individual and requires a freedom of the mind from bias or prejudice of any kind. Precision in estimating the conditions, infinite patience, delicacy, and conscientiousness, in hunting out the individual variation there before one, and inexhaustible ingenuity in meeting all the varied and varying phases and factors, are the prerequisites.

There is but one invariable rule: Have no rule. Rules are the makeshifts of the lazy and unintelligent. The cunning rely on them, forgetful that cunning is really stupidity. Optical machines are often rules made into iron rods, scales and wheels. They may be of service if used not as dictators but as slight helpers, in the hands of the intelligent and guiding machinist, but they may serve as the excuse and ruin of those who rely on them to the exclusion of intelligence and diagnostic skill.

Any number of cases could be epitomized, illustrating the foregoing suggestions. I shall content myself with but few, because in every oculist's memory there doubtless arises plenty of examples.

CASE 1.—A lawyer who carried on a tremendous amount of eye work had an enormously high and complicated compound hyperopic astigmatism. Despite a perfect correction of his ametropia by capable and good oculists, and despite the best treatment by general physicians, his dyspepsia persisted. In obedience to his demand his oculists had allowed him to wear bifocal eyeglasses. A difference of five degrees or ten degrees in his astigmatic axes, inevitably caused by maladjusted eyeglasses, rendered his ametropic correction worse than useless. They failed to cure their patient because they did not demand spectacles.

CASE 2.—A woman of thirty-nine had sick headache which reappeared every few weeks despite my best correction of her low compound hyperopic astigmatism. I had three times gone over my work and found no change in her glasses was to be made. I feared I had what I had always been looking for—a typical migraine which I could not cure with glasses. Inquiry elicited the fact that the woman habitually did an enormous amount of literary work. I ordered presbyopic correction and bifocal spectacles to be worn constantly and the "migraine" has never shown a sign of itself since.

CASE 3.—A healthy, clear-headed intellectual man was given two pairs of spectacles for his myopic astigmatism, a stronger or higher correction for use at the theater, driving, etc., a weaker correction for reading and daily or constant use. For a year his wife and daughter observed, without telling him, that whenever he wore the strong, or accommodation-exciting glasses he "caught cold" with coryza, hoarseness, etc., which at once disappeared when the weaker lenses were used. He used the stronger ones but few times a year. When certain of the strange coincidence his wife told her husband. In the past ten years the cold has been produced in this way, a hundred or more times. Now if his weaker glasses get "crooked," or maladjusted, miscorrecting his axis of astigmatism by a few degrees, his cold promptly appears, to vanish in an hour after a visit to the optician.

CASE 4.—A gentleman of fifty years of age had consulted many of the most famous oculists because of severe and frequently recurring subconjunctival hemorrhages. Some of these had refracted his eyes, some had not, but all had followed a not uncommon custom of charging such symptoms to gout. None had found any error of refraction, except, of course, a couple of diopters of presbyopia. By the most competent authority his eyes had been pronounced mathematically emmetropic and perfect. None, of course, had used a cycloplegic. With paralyzed accommodation I found 0.25D of simple myopic astigmatism axis 180 degrees in each eye. For several years he has had no hemorrhages and by his glasses he has had also such relief from other cerebral symptoms that he has had heavy iron spectacles made for use in his bath, so that he may not be without lenses for a minute.

DISCUSSION.

DR. ROBERT L. RANDOLPH, Baltimore, said that he is surprised to find how often it is necessary to use homatropin in order to discover the astigmatism which is frequently responsible for the discomfort in these cases. The presbyopic condition, no matter how advanced, has never deterred him from the use of homatropin where there was the slightest doubt in mind as to the true condition of the refraction and he called attention to the great convenience of the cocain-homatropin discs. He usually employs two of these in each eye at intervals of twenty minutes, and an hour from the time when the first disc is introduced into the conjunctival sac the patient is ready for the examination. Results in his experience in both old and young do not differ from the results obtained when either atropin or

homatropin has been used. The fact that the desired result is obtained quickly is a distinct advantage as lessening the chance of high tension, and the fact, too, that the effect is promptly nullified by eserin is an additional advantage for obvious reasons. It is no uncommon thing for a patient to be able to use the eyes for close work within two or three hours after the instillation of the eserin. It is his habit to wait till the patient has experienced decided twitchings of the lids before allowing him to leave the office. These discs can be best used when put up in gelatin capsules (No. 2 size). The smaller half of the capsule is taken off and the disc can be emptied right into the conjunctival sac, where it remains. Four capsules, each containing a disc, are used for each patient.

DR. G. C. SAVAGE, Nashville, Tenn., said that a strong ciliary muscle means a small nervous impulse and late presbyopia. The presence of a strong ciliary muscle may be determined as follows: In the first place, there is orthophoria for distance and exophoria for near; exophoria far, greater exophoria near; or esophoria far and less esophoria near. Another method of determining this is that these patients will overcome a minus lens stronger than 3 diopters—they will overcome 4, 5 or 6 diopters and sometimes 7. Whenever there is delayed presbyopia, beyond the age of 45, there has been an abnormally large ciliary muscle, requiring a corresponding small nerve impulse. A weak muscle means a strong brain impulse and early presbyopia. This condition can be determined as follows: In the first place there is orthophoria for distance and esophoria for near; exophoria far, less exophoria near; or esophoria far, greater esophoria near. A weak ciliary muscle demands a strong impulse from the tenth conjugate center in the brain. It is generally understood that the center for the ciliary muscle is intimately associated with the third conjugate center for convergence. Every excitation of the tenth center means overexcitation of the third center controlling the interni, and means esophoria for near. These patients can not overcome a minus lens of 3 diopters; they will overcome a 2.50 maybe, or a 2, or a 1, and Dr. Savage has had patients who could not overcome a minus lens of .50 diopter. Dr. Savage related the following case: A confrère sent him a patient for consultation. The lady was 28 years of age and had other troubles besides a refractive error. She had had albuminuric retinitis and now has optic atrophy. She was suffering and no one expects suffering from atrophy of the optic nerve. The physician wanted Dr. Savage to help him work out the case, and in testing the case Dr. Savage found that she had orthophoria for distance and 6 degrees of esophoria for near. A plus 1.50 D. sphere gave her orthophoria in the near. That woman had a weak ciliary muscle. It required a strong impulse from the tenth conjugate center in the brain. The impulse liberated from that center caused a corresponding excessive impulse from the third center controlling the interni, and hence the esophoria. With a plus 1.50 D. sphere before her eyes her esophoria was corrected. Now the absence of necessity for an excessive impulse from the tenth center put into a normal state of action the center in the brain acting on the interni. A plus 1.50 D. presbyopic correction for that woman, only 28 years old, will be most helpful. Dr. Savage said that the corrected hypermetrope will not have, as a rule, early presbyopia, for he has an abnormally strong ciliary muscle. Correct the hypermetropia, being always guided by the muscle condition as to ordering full or partial correction, and, if in early life the hypermetropia is corrected, the patient will go beyond 45 without the need of presbyopic correction. It means delayed presbyopia because hypermetropes have abnormally large ciliary muscles.

DR. HERMAN KNAPP, New York City, said that he wears bifocals and his eyes do not trouble him at all. He is hypermetropic and presbyopic, of course, and his sight with glasses is just as good as when young. He looks at a distance and reads without even bending his head, and operates with great comfort, even when doing fine work like a capsulotomy. He recommends these glasses as an immense comfort. The line where the segments meet gives a prismatic effect, however, no matter what any one may say to the contrary. This shows particularly in walking down stairs, when a person must be cautious in order not to misstep. It is his habit to examine every patient who has any nervous trouble with the ophthalmoscope, with glasses and also with the phorometer. In all these anomalies of refraction a cure is obtained. Dr. Knapp thinks that the trouble is not in the muscle and he is astonished that Dr. Savage speaks of the weak ciliary muscle. It is a mere hypothesis which has been used to explain the different anomalies of refraction; for instance, a myopic squint. When a patient comes to him with asthenopic symptoms, after using the ophthalmoscope he tries the glasses if everything is all right with the ophthalmoscope, and, in the great majority of cases, he finds hypermetropia of .50 or 1 diopter; if he goes further and examines them with the phorometer he finds 2.50 or 3 degrees of esophoria; when he puts the convex glasses before these eyes the esophoria disappears. The person who is hyperopic 2 or 3 diopters must make a very strong effort at convergence. He must send into the ciliary muscle an impulse to do away with the 2 or 3 diopters of hypermetropia and in that way the latent hypermetropia can be detected.

DR. MARK D. STEVENSON, Akron, Ohio, said that he uses homatropin in from 1 to 2 per cent. solution while the patient waits in a darkened room. The ciliary muscle yields more readily to the cycloplegic action of the drug in a dark room since the patient is unable to read or see objects. In a light room the patient tries to use his eyes and the ciliary muscle is constantly straining against the effect of the drug; this, with the dazzling caused by the enlarged pupil, gives rise to discomfort, often congestion of the tunics of the eyeball, and headache. Dr. Stevenson uses atropia in the young, if the patient can spare the time, and homatropin in nearly all other cases. The degree of strain found in some old people's eyes is sometimes surprising. He uses cycloplegics in all ages unless he finds tension, and in people over 35 or 40 he puts one or several drops of eserin in the eyes as soon as he has completed the examination. Young myopes are sometimes unable to wear their full distant correction for near work. In some of these cases, after proper trial, it is well to give bifocals or two pairs of lenses. Occasionally young people have more close work to do than the ciliary muscle can accomplish; in some such cases bifocals or two pairs of lenses are useful. The relation between accommodation and convergence is too often neglected. It is well known that people past the age of puberty gradually lose their accommodative power until they require a presbyopic correction. It has been Dr. Stevenson's observation that these patients usually at the same time lose some of their convergence power. The patient's accommodation is generally relieved by a lens which draws the near point closer. This accomplishes two things: It necessitates greater convergence and at the same time partially or wholly removes accommodation, one of the chief stimulants to convergence. Many presbyopes have weak convergence and the additional burden added by advancing the near point gives rise to discomfort. In cases where the convergence is weak, give a farther reading distance, prism exercises with strong prisms bases out, or sometimes even combine prisms with the lenses bases in, or the equivalent by decentering. Sometimes it is well in a high degree of insufficiency, especially if combined with weak adduction and strong abduction, to perform a tenotomy of the strong or an advancement of the weak muscle. In cases with great excess of convergence it is often well to give a short reading distance and rarely use prisms. Eyeglasses with bifocal lenses properly adjusted are often worn by patients who would lay spectacles or two pairs aside. The reading angle should be correct in such cases. The patient's vocation must be kept in mind in determining proper working or reading distance. In a paper presented to this Section in 1900 Dr. Stevenson called attention to the unequal accommodation in the two eyes. If possible, give distant lenses for a few weeks before prescribing for near. Too frequently the correction for near is determined after the accommodation is tired by a long examination for distant correction; in such cases the reading or working distance will be too close.

DR. WALTER L. PYLE, Philadelphia, stated that early in his

career his attention was directed to the necessity of careful refraction, and to the value of cycloplegics. At the meeting of the American Ophthalmological Society in Washington, in 1903, Dr. Pyle reported the case of a patient aged 50, in which he used a single instillation of a 5-grain homatropin solution to get a better view of some peripheral lenticular opacities. On the morning of the third day she had violent acute glaucoma in both eyes. Dr. Pyle found her completely blind with both cornea steaming and with the eyeballs absolutely hard. He immediately performed posterior sclerotomy, which was followed by speedy relief. He also used hot applications and eserin. Within twenty-four hours the patient had normal visual acuity. The use of a drop of eserin solution before elderly or middle-aged patients leave the office avoids dangers of this kind.

DR. FRANCIS VALK, New York City, stated that in his work of fitting glasses for presbyopia, the more he leaves out the scientific ideas and gets down to natural methods the better seem to be his results. His objective point in fitting glasses for presbyopia is first to put the eye in a perfectly normal condition. The history of presbyopia in an emmetrope shows that they get along in life without any symptoms of asthenopia until they become 40 or 45, and then they require glasses. If they go to an optician and buy a pair of convex glasses, stronger as they need them, these glasses will carry them through life with no trouble. So, in a case of ametropia it must be put in the condition of the emmetropic eye by correcting the refraction, and then the addition of convex glasses will correct the presbyopia. In twenty-five years' work Dr. Valk has never found it necessary to use a cycloplegic in a case over 40 years of age. Some may find it necessary to dilate the pupil, but he has not met these cases. He corrects the refraction with the most careful objective examination, confirms this with glasses and then tests the range of accommodation. The text-books say bring the near-point up to eight or nine inches, but in many cases the position at which the patient works must be considered. His work may be at the desk and, if he has a very small region, this near-point must not be brought too close to the eyes. While Dr. Valk does not approve of the use of atropin in any case over 40, yet he would not hesitate to use it if he considered it necessary.

DR. JOHN S. KIRKENDALL, Ithaca, N. Y., agreed with Dr. Gould, but believes that the presbyopia spoken of by Dr. Stevenson in young myopes is apparent but not real. It is an acquired diseased condition, and if Dr. Stevenson continues to correct this apparent presbyopia in such cases he will add to the trouble by weakening the already atrophic ciliary muscles. Dr. Kirkendall's treatment of these cases is to thoroughly atropinize these patients, work out carefully their refraction and give them the full correction for both distant and near work, thereby developing the ciliary muscles, stopping the progress of the myopia and putting their eyes in the state of emmetropia; but at or about the age of 45 recognizes and corrects the presbyopia.

DR. J. L. THOMPSON, Indianapolis, said that he is not afraid of mydriatics at all. When von Graefe and others spoke of the danger they used atropin. Dr. Thompson should as soon expect to rush on the shield of Zeus and get off without punishment as to use atropin. Many people over 60 have some accommodative power. He uses homatropin because it can be corrected so nicely with eserin. The patient can be kept in the office until the pupil contracts. There may be a simulated astigmatism in the opposite meridian to the usual one and on using a cycloplegic it vanishes. Dr. Thompson sometimes examines women patients at 38 and then again ten years later and they are still not 40. Find out their reading point and judge for oneself about their age. If patients refuse the bifocals they may have two pairs of glasses. Dr. Thompson thinks that Dr. Gould stretches the matter a little. Sometimes on a bright day Dr. Thompson has migraine when passing a fence or on looking at a new, bright carpet. He has had it suddenly develop when getting ready to operate, caused by reflection from the white caps of the sisters.

DR. GEORGE M. GOULD stated that he uses homatropin and cocain—two-thirds homatropin and one-third cocain; and does not hesitate to use it up to the age of 60, or any time, because in suspicious cases he immediately brings back the pupil and the accommodation to normal with eserin. This he does with young and old if they wish to use the eyes the same day. He uses the eserin in solution of 2 gr. to the ounce, and the patients read as before in fifteen or twenty minutes after several instillations. In presbyopic cases one avoids in this way all possibility of glaucoma. The stronger eserin may cause a little spasmodic twitching for a few minutes, but otherwise no harm, so far as Dr. Gould has observed. Dr. Gould does not see how Dr. Valk can correct presbyopia without the use of a cycloplegic and he will be grateful to anyone who can show him how to do it. He believes in correcting the astigmatism and in the slightly misplaced axes he can not do this without a cycloplegic. He finds a large number of cases with axes 10, 15 and 20 degrees off from the vertical or horizontal, and in young people that, in what he calls "the dominant eye," will produce tilted head, which often brings about compensatory spinal curvature.

THE USEFULNESS OF THE OPHTHALMOMETER.*

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The ophthalmometer has gone through various stages of appreciation, depreciation and overpraise, back and forth over the same ground again and again; and still we have its enthusiastic advocates, claiming that it does away with the necessity of using mydriatics, while others consider it as merely an expensive scientific toy, utterly unreliable and of no practical value. Is it not worth while, then, to give the subject a few minutes of dispassionate consideration? Let us first take up the question: Is the ophthalmometer of any practical use in refraction work?

Those who argue against its usefulness base their argument on the ground that it only shows corneal astigmatism. The argument must turn largely, then, on the frequency and amount of lenticular astigmatism. Many authorities state that most of the astigmatism is corneal, and Suter and others explain the subtracting of half a diopter from the finding with the instrument in cases with the rule and adding the same amount in those against the rule by the fact that the lenticular astigmatism averages half a diopter against the rule. There is abundant testimony that this allowance should be made, and this certainly accords with my experience. A case will illustrate:

CASE 1.—Miss G., a sufferer from headache back of the eyes, had worn +0.25 sph. right eye, +0.50 sph. left eye, for two years without relief and they blurred her distant vision, which was improved from 15/15— to 15/10 with +0.50 cyl. ax. 90° right, +0.25 cyl. ax. 90° left. The ophthalmometer showed 1 D. right, 0.75 left, axis 90° or 180°, with the rule. Assuming it to be probably convex from information already obtained and subtracting 0.50 D., the usual allowance, we get the same glasses she saw best with. These were prescribed and gave satisfaction.

The ophthalmometer here only increases our confidence. This case is a type of such a common experience as to seem trite. Everyone doing refraction work recognizes the difficulty in regard to cases with oblique axes, and the following illustrations are of this class:

CASE 2.—A schoolboy, R. T., was referred to me because

* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

his teacher noticed that he saw poorly. Vision was found to be about 15/50 each eye and no glass seemed to improve it. The ophthalmometer showing 3 D. axis 15° or 105° right, 3 D. axis 165° or 75° left, we then tried +2.50 axis 105° right, +2.50 axis 75° left, which brought vision up to nearly 15/20. The astigmatism, axis and amount were revealed by the instrument.

CASE 3.—Miss C., aged 18, consulted me Sept. 15, 1902. She had been operated on for internal squint when a little child. For some time the left eye had been turning up and a little out, worse when the eye was tired. R. V. 15/15, L. V. 15/40; not improved by any glass. In fact, she thought this eye nearly useless. We talked of operating on the muscle, as she was fond of going into society and was much embarrassed by the disfigurement. Here the ophthalmometer came to our rescue, showing 3 D. axis 30° or 120° left eye and +2.50 cyl. axis 120° with +1 sph. brought vision in this eye up to 15/15 practically. A small amount of astigmatism was found in the other eye. She has worn the glasses then prescribed with greatest satisfaction ever since, the eyes being perfectly straight under the glasses.

Who would say after such an experience that the ophthalmometer was of no use? In the cases so far cited no mydriatic was used. Shall we say, then, that this instrument makes it unnecessary to use mydriatics? While there are many cases like the above where it seems safe to prescribe without paralyzing the accommodation, and while the ophthalmometer, by increasing our confidence in the result already obtained, or giving first clew to axis and amount of astigmatism, confirmed later by other tests, adds very greatly to the class that can be fitted safely without a mydriatic, yet we feel still greater confidence after an examination under cycloplegia in any case, and in many cases it is indispensable. For example:

CASE 4.—C. T., wearing +1.50 sph. without relief to eyeache and with poor vision, seemed to accept +0.75 sph. each eye, but the ophthalmometer showed 0, which means either +0.50 cyl. axis 180°, or —0.50 axis 90°. Under homatropin his full correction was +1 D. sph. = +0.50 axis 180° both, thus confirming the instrument as to the astigmatism and correcting the mistake that would have been made by prescribing from the test by the lenses alone and showing what neither of the other examinations did, that there was compound hyperopic astigmatism.

But there is another advantage in using a mydriatic; it makes the examination with the ophthalmometer easier and more reliable. For example:

CASE 5.—Miss J. A. came to me Aug. 24, 1902, with symptoms of eyestrain. She seemed to see best with +0.50 cyl. axis 105° right, +0.50 axis 75° left, and the ophthalmometer indicated the same. These were prescribed and gave partial relief for a year, when she returned to see if they could be improved. This time homatropin was used and the same amount of astigmatism was shown both by the test lenses and ophthalmometer, but instead of the oblique axes both methods gave 90°.

This shows that the axis of the corneal astigmatism may be made to change probably by the lids pressing on the balls in straining to see, and this is avoided or lessened when the eye is put at rest by the mydriatic. A few other cases have shown different axes under the mydriatic from those of first test.

In view of what has been said it might seem unnecessary to consider the question: Is the ophthalmometer an infallible guide? But it will be understood that we mean subject to the limitations already expressed. In other words, Can we rely on the ophthalmometer in all cases, both as regards axis and amount of astigmastism, even after use of mydriatics? We can answer this best from our case book:

CASE 6.—Mrs. M., a sufferer from headache, had a small astigmatism recognized by the ophthalmometer in both eyes, axis 90° or 180°, while test lenses under homatropin gave left axis 135°, which was ordered.

CASE 7.—A little girl with frontal headache saw best with +0.50 axis 135° right, +0.50 axis 45° left, and homatropin confirming this, they were prescribed in spite of the fact that the ophthalmometer did not give oblique axes, and they relieved the symptoms.

CASE 8.—Miss M. on first test took +0.50 axis 90° right, +0.50 axis 180° left, which was apparently confirmed by the ophthalmometer, but homatropin showed simple hyperopia in left eye.

A few other similar cases have been observed, and two in which the instrument gave 1.D. more astigmatism than homatropin.

It is evident, then, that we have not an infallible guide in the ophthalmometer. Some one may ask, Do not the cases just cited prove as much against the instrument as the other cases did in its favor? They would, if numerous; but these cases are very exceptional, not types of many found in every-day experience like those cited in the argument in favor of the usefulness of the instrument. In fact, I have given nearly all the exceptional cases observed from June 1, 1901, to Jan. 1, 1904, under this head, and most of these can probably be explained as examples of unusual amount of lenticular astigmatism, or those where accurate ophthalmometric readings were rendered impossible by undue action of the lids, restlessness of the patient or other similar difficulties.

If not infallible, what are the limitations? This has already been answered, in part at least. It does not show lenticular astigmatism, which is an important factor in some cases, and there is some liability to mistakes from hasty work of the observer, restlessness of patients, contraction of lids, failure to look in direction desired, etc. Of course, it does not show hyperopia or myopia; in fact, it does not even show whether the astigmatism is hyperopic or myopic, except that a long radius suggests the former, a short one the latter. Yet it is very useful in spite of these limitations, and this leads to a comparison between this and other methods of measuring refraction.

This comparison will be limited to use of test lenses, with and without mydriatics, retinoscopy, the ophthalmoscope and the ophthalmometer. The objection to relying on the test lenses without a mydriatic is that the patient often accepts the wrong glass on account of undue or irregular contraction of the ciliary muscle. We do not need to cite cases to show that this method alone is very uncertain. Cases already cited bring out the advantage of supplementing this by the ophthalmometer to confirm or correct the result of the tests, and in many instances we find vision better with the glass suggested by the instrument.

However doubtful we may be about results of tests with lenses alone, there is probably no other method so sure and satisfactory when supplemented by the use of homatropin, scopolamin, atropin or other substances to control the accommodation. In other words, what the patient sees best with, when the eyes are under the influence of a cycloplegic, is the measure of his refractive error, to be relied on, if at variance with the findings by other methods.

Yet even here we should be careful that we have what the patient actually sees best with, and not what he seems to see best with. I have seen examinations under a mydriatic where astigmatism was found with axis perpendicular, apparently, in which the ophthalmometer gave

15° off, and later trial of this axis actually showed improvement in vision. It may be said that this ought to be discovered by trying the cylinders at various angles in the ordinary tests, but we know that patients often fail to detect small differences, and it frequently takes several trials and much care to bring them out, so that an instrument which quickly suggests the axis is of immense value.

The ophthalmoscope is of greatest assistance in high degrees of refractive error, enabling us to measure them approximately in a very short time, but it is not of much account in small defects, which form quite a large proportion of our work.

Retinoscopy would probably be voted by the majority of oculists the best (objective) method of measuring refraction. More is to be learned from it than from any other one (objective) method, as it shows hyperopia or myopia as well as astigmatism, and its measure of the latter is not limited to corneal astigmatism, but includes the lenticular as well. Now, if this all be true, practically as well as theoretically, and if we could all measure by this method any kind of refractive error down to 0.25 D., as some claim to do, no other method would be necessary, and even the trial case might be dispensed with. But retinoscopy has its drawbacks, too; it requires a mydriatic in all cases, and even then one has to be careful to get the refraction of the center of the field, and not the periphery. The method is also a slow one and necessitates the awkward changes of lenses from the trial case, or use of some cumbersome apparatus like the Würdemann skiascope in the hands of the patient, which can not be used easily, especially with children. Moreover, there is ground for skepticism as to the skill claimed by some to measure even 0.25 D. of any kind of refractive error by this method in a few minutes; at least such skill is limited to a few. Nevertheless it has some advantages, and there is ground for much that is said in its favor. It is especially valuable in examining little children and illiterates.

While the ophthalmometer gives less information than retinoscopy, what it gives is obtained more easily, more quickly and is more positive. In other words, it is the quickest and surest way of measuring corneal astigmatism, and since we have a definite rule for the majority of cases in regard to the relation between corneal and total astigmatism and can determine the hyperopia or myopia by the ophthalmoscope and testlenses, we have, in my judgment, in the ophthalmometer, combined with these other means, a method for general use not surpassed by any other for accuracy of results or speed in execution. An additional point is the fact that this instrument is so much more valuable in those cases where a mydriatic is refused, and adds so largely to the number that can be quite safely fitted without the annoyance and loss of time due to paralysis of the accommodation.

CONCLUSIONS.

1. The ophthalmometer is not merely an expensive toy, but a very useful instrument.

2. It shows the corneal astigmatism which, in most cases, is 0.50 D more than the total astigmatism if with the rule, or the same amount less if against the rule.

3. It does not do away with the necessity of using mydriatics, although it adds largely to the number that can be fitted with comparative safety without them.

4. It is not infallible as regards axis or amount of astigmatism, but the cases in which it misleads are exceptional and probably the result, chiefly, of unusual difficulties and irregular or extraordinary lenticular astigmatism.

5. It is one of the quickest and surest methods of determining astigmatism, either axis or amount, frequently giving the first clew.

6. In connection with the ophthalmoscope and testlenses (in many cases with use of a mydriatic), it is as good a routine method of measuring refraction as we possess.

This is submitted not dogmatically, but with the hope of starting a discussion which will give us the exact truth.

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DISCUSSION.

DR. WENDEL REBER, Philadelphia, said that he has used the ophthalmometer a great deal, but that he is not so enthusiastic as Dr. Heath. He uses it almost invariably in his office work, and, while he does not claim to be able to measure cases to within a quarter diopter with it, he can measure down to such a degree that he knows about what the corneal astigmatism is. Mydriatics, of course, are always refused by the patient at first. The ophthalmometer is most valuable, he thinks, as to its negative evidence; that is to say, in the lowest errors one does not get reliable evidence, but where there is one or more diopters one gets very good results. In cases of cataract, of course, it is important to know the amount of corneal astigmatism. While it is an important office adjunct, at the same time it is certainly not the faithful, accurate servant that retinoscopy is.

DR. J. M. RAY, Louisville, Ky., declared that, while recognizing that the ophthalmometer does not reveal the absolute amount of astigmatism in all cases, yet in daily use he thinks it invaluable as an aid in finding the astigmatic error. It is usually accurate as to the axis. He has used it for fourteen years on several thousand cases and would feel lost without it.

DR. C. F. CLARK, Columbus, Ohio, stated that he has been a persistent user of the ophthalmometer, and feels as Dr. Reber does about it. He asked why, in post-cataract cases, we do not obtain a correct result with the ophthalmometer. If the corneal astigmatism is accurately shown by the instrument, he asked why, when the lens is removed, we can not get a correct reading. There may be three diopters with the ophthalmometer, when only two will be the correct estimate.

DR. EDWARD JACKSON, Denver, said in reference to Dr. Clark's question, that the scale of the ophthalmometer is made out for the complete eye; it does not fit the aphakic eye; it does not give the true curve. After cataract extraction, there is an area toward the corneal section that shows the greatest departure from the original curve. He uses the ophthalmometer in every refraction case, but he does not depend on it. It is like the averages in presbyopia. One must test by the other methods afterward and see if it is correct.

DR. F. C. HEATH, Indianapolis, agreed with Dr. Jackson that the ophthalmometer is not to be relied on alone. It is not infallible. He does not consider it an exaggeration to say that he finds in 75 per cent. of his cases of astigmatism that the ophthalmometer is correct.

The Abdominal Aorta in the Aged.—Bauer holds that the abdominal aorta is frequently the site of a chronic aortitis which less frequently affects the arch (*Arch. Gen. de Med.*). The symptomatic manifestations are irregular as a rule, but occasionally symptoms point more or less directly to the condition especially in emaciated individuals in whom palpation and auscultation can be employed. In fleshy individuals the difficulty is greater, but persistent digestive disorders, lassitude, early fatigue, various sensory symptoms such as local feelings of cold, numbness, vague pains in the limbs, sometimes painful cramps, trophic disorders, etc., may point to the condition. It is often, however, undiagnosed; in rare instances attention may be called to the condition by an aggravation of acute or subacute aortitis.

INTERNAL AND EXTERNAL HEMORRHOIDS.

WITH SPECIAL REFERENCE TO THEIR TREATMENT.*

LEWIS H. ADLER, JR., M.D.

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PHILADELPHIA.

I have been requested to address you on the subject of hemorrhoids, viewed so far as possible from the standpoint of making my remarks of value and interest to the general practitioner. Time permits of only a brief synopsis of the subject.

Without making a thorough examination of a given case, no certain diagnosis can be made and no plan of treatment can be carried out with any degree of satisfaction. In most departments of medicine this fundamental principle is carefully observed, but possibly owing to a false sense of modesty on the part of patients afflicted with rectal trouble, some physicians are led to treat such persons without an exploration, either visual or digital, of the affected region. Consequently, it is not an infrequent occurrence for me to see a patient with an external hemorrhoid, greatly aggravated by the vain efforts made to push it within the anus. This illustration will suffice, no doubt, to emphasize the necessity of examining every case of presumed rectal trouble. Such an examination should include not only an ocular inspection of the parts outside the anal canal, but likewise a digital investigation of the rectum. It is only in cases of irritable ulcer of the anus (fissure) that an examination with the finger should be omitted. A rectal examination is not a very pleasant one, either to the practitioner or to the patient, yet without making it the physician's reputation, as well as the patient's health, may suffer.

Assuming, therefore, that attention has been paid to the proper methods to insure the making of a correct diagnosis, we are prepared to consider the variety of hemorrhoids, preliminary to a consideration of the treatment of the individual forms.

EXTERNAL HEMORRHOIDS.

External hemorrhoids are divided into the venous, the cutaneous and the compound.

Venous.—The venous variety occurs in three forms: 1. As a marked varicose condition of the plexus of the external hemorrhoidal veins. 2. As a thrombosis of this plexus. 3. As a clot of extravasated blood, due to a rupture of a varicose vessel. The existence of this last variety is denied by some authorities, but I have seen and operated on a number of such cases sufficient to warrant the classification given.

Cutaneous.—The cutaneous pile consists essentially of a hypertrophy of the skin surrounding the anus. It frequently is the result of a former venous hemorrhoid, a fold of skin being left after the clot has been removed, either by absorption or operation. When uninflamed, it occasions no great inconvenience, but when aggravated by improper diet, irregular habits, uncleanliness, etc., it invariably causes the patient an amount of suffering quite disproportionate to the pathologic appearance.

Compound.—The compound or so-called externo-internal pile is one in which the tumor is not only largely external, but is also intimately associated with an internal hemorrhoid, and is, therefore, in part, covered with mucous membrane.

INTERNAL HEMORRHOIDS.

Internal hemorrhoids are divided into the varicose, the capillary and the compound or intero-external.

Varicose.—The varicose or venous internal hemorrhoid is the form of tumor most frequently met with in the bowel, and consists of a varicosity of the internal hemorrhoidal veins, with a hypertrophy of the surrounding tissue in which these vessels are embedded.

Capillary.—The capillary or nevoid hemorrhoid consists of a small, raspberry-like arrangement of the arterial capillaries within, or just beneath the surface of the mucous membrane of the rectum. They are the source of frequent hemorrhages due, no doubt, to a covering of a very thin layer of epithelium, which is readily ruptured. They do not protrude and can not be located by digital examination.

TREATMENT OF EXTERNAL HEMORRHOIDS.

The local treatment of these tumors may be considered under the two heads, the operative and the palliative. It is only when these tumors are inflamed that patients suffer marked inconvenience, and find it necessary to consult a physician, and it is at such a time that I believe the best method of treatment is that of removal. If, however, the patient refuses to submit to our judgment in this matter, recourse must be had to local applications for the relief of the suffering incident to the acute inflammatory stage. What we have to say regarding the treatment of piles which are external applies with equal force to all the varieties included under the classification of this form of hemorrhoids.

Operative Treatment.—It is only by this plan that we may effect a radical cure. It may be accomplished by one of three methods, named in the order of our preference: (*a*) excision, (*b*) simple incision, and (*c*) excision and primary suture of the cutaneous edges of the resulting wound.

(*a*) EXCISION is the mode of treatment now employed by most proctologists for the cure of all the various forms of external hemorrhoids when the patient is seen in the acute stage of the trouble. The operation consists in washing the parts well with the tincture of green soap, alcohol and creolin, so as to render the field of operation as aseptic as possible. The hair is not shaven, as experience has shown that it is unnecessary. Formerly when the hair was removed, its subsequent growth was most annoying to the patient, feeling somewhat as though the vicinity of the anus had been converted into a pin cushion (by no means an empty one). The tumor to be removed is now anesthetized by means of a hypodermic injection of a 2 per cent. solution of the hydrochlorate of cocain, of which from 10 to 20 minims usually suffice. In connection with the use of local anesthetics, attention is called here to a matter, with which I have had no personal experience, but which justifies note, to-wit: The work done by Dr. Samuel G. Gant of New York City in the use of sterile water anesthesia in the office treatment of rectal diseases.[1]

Before removing the needle of the syringe, time is given the solution to permeate the tissues. The pile is next grasped by some suitable instrument, such as a hemostat (sometimes by two, if the hemorrhoid be a large one), and the tumor is rapidly removed in its entirety by means of a pair of scissors curved on the

* Read before the meetings of the Northwestern Medical Society and of the Medical Society of Germantown, Philadelphia, 1904.

1. New York Medical Journal, Jan. 23, 1904.

flat. It is rare that any vessels of size are met with and the ease with which, in this region, a bleeding vessel can retract and contract, obviates any necessity for the use of the ligature. All clots are removed. The resulting wound is now lightly packed with cotton, which is changed several times until most of the bleeding is stopped. The flow of blood is encouraged for a short time so as to get rid of any excess of cocain remaining in the vicinity.

Finally, when active bleeding has ceased the wound is packed with gauze, a 10-grain iodoform suppository is inserted into the rectum, and over the seat of operation is placed a firm pad of gauze and cotton and then a "T" bandage completes the dressing.

(*b*) SIMPLE INCISION requires a similar technic to that described for excision, with the exception of the operative part. This latter is accomplished by catching the parts on either side of the tumor between the thumb and forefinger of the left hand and transfixing its base in the direction of the radiating folds of the anus with a sharp-curved bistoury and cutting outward. Gentle pressure will cause the extrusion of most of the clots; any of them remaining may be picked out with a pair of forceps. The subsequent treatment consists in packing the wound with gauze and then using a similar dressing to that advised in the operation of excision. The main disadvantage of this operation consists in the fact that the skin distension occasioned by the inflamed pile is left, and may subsequently become inflamed or may refill with blood.

(*c*) EXCISION COMBINED WITH PRIMARY SUTURE OF THE RESULTING WOUND.—The essential difference between this method and that of simple excision consists in the close apposition of the wound by carefully buried silkworm gut, or some similar, suitable material. The advantage of the operation lies in the hope of obtaining primary union. I have practically discarded this method, as the suture tracks are liable to become infected, and I think the mechanical presence of the sutures, together with the constriction they produce, combine to add materially to the annoyance to the patient than when the parts are left to heal by granulation.

The Non-Operative or Palliative Treatment.—This consists primarily in keeping the parts thoroughly cleaned by bathing with water as hot as can be borne and in applying some soothing and astringent lotion during the acute inflammatory stage. Some of the preparations which I have employed with satisfaction are: Ichthyol, 50 per cent., combined with equal parts of lanolin and ung. aquæ rosæ; or a mixture, containing one ounce of the fluid extract of hamamelis; a half-ounce of the fluid extract of hydrastis; a like amount of the compound tincture of benzoin and two drams of the tincture of belladonna. This solution is to be well shaken before using, and is kept in the bottle and placed either in hot water and applied frequently by means of hot compresses to the affected part, or if cold is more agreeable to the patient, then the medicine is surrounded with ice and compresses wrung out of ice water are kept saturated with the mixture and are applied in the same manner as when they are used hot. Another useful mixture is the strong subacetate of lead solution, combined with an equal quantity of the tincture of opium, of which a teaspoonful is added to a wine glassful of cold milk and applied with frequency to the anus. In addition to these measures, the bowels should be freely moved, and a light, easily digested diet, with rest in bed, prescribed. These remedies will, as a rule, cause the inflammatory symptoms to subside within a few days, but usually a thickened tag of skin will remain, which is liable at any time, on the slightest provocation, to become inflamed.

TREATMENT OF INTERNAL HEMORRHOIDS.

With the exception of the nevoid or capillary pile the treatment of these tumors may be discussed under the following classification: (*a*) Preventive, (*b*) palliative and (*c*) operative.

Prior to taking up this part of our subject, it may be well to say a few words regarding the treatment of the capillary hemorrhoid. The safest method of effectually dealing with this condition consists in the use of the electrocautery applied by means of a small electrode. Anesthesia is not essential. Care must be exercised not to cauterize too deeply. A very old and deservedly popular treatment of this form of pile is the use of fuming nitric acid. Care must be exercised not to excite too intense an inflammatory reaction. The pile is caused to protrude into a speculum, is thoroughly dried with cotton on the end of an applicator, and then the acid is applied all over its surface by means of a rod of glass or a stick of wood. Before removing the speculum, which is left *in situ* for three or four minutes, a dossile of cotton is placed over the treated area so as to absorb any excess of the acid.

Caution in the use of the acid is necessary in order to avoid its getting on the cutaneous surface or on the margin of the anus. A good preventive measure against this accident is the smearing of the region named with glycerin or vaselin. One treatment of the acid usually suffices to stop the bleeding, but two or three applications may be required to completely destroy the tumor. These applications may be repeated at intervals of three to seven days.

Preventive Measures.—These consist, to a large extent, in the avoidance of the sedentary habits, the use of improper toilet paper, such as newspaper, printers' ink being a decided irritant, excessive venery, improper diet, the excessive use of alcohol or tobacco, and last, but not least, the constantly increasing employment by the populace of drastic purgative medicines To cure the constipation, which is the result of the forenamed conditions, and which, to my mind, is the most frequent cause of piles, it is essential that regularity be observed in the time of going to the closet. This is the first step to be taken in the correction of this condition. Patients should be directed to go at the same hour daily, whether the desire exists or not. Before or after the morning meal will usually prove the best time. Physical exercise is another very important factor in correcting costiveness. To be of benefit it must be employed regularly, spasmodic efforts being harmful rather than effecting good results. Certain articles of food often aid in the removal of this affection, such as the fruits, of which apples, oranges and prunes are the best.

Medically, the treatment of constipation covers a wide range of remedies. No one plan can be outlined that will benefit all, or even the majority of persons so afflicted. It is impossible to consider this phase of the subject further, as it would necessitate prolonging this article to an unreasonable length.

Palliative Means.—This plan of treatment to accomplish the desired results must embrace a three-fold purpose: 1, The reduction of any inflammation; 2, the arrest of hemorrhage; and 3, the prevention of prolapse

of the tumors. It also includes careful attention to all the details enumerated under the head of preventive measures. In the early stages of the hemorrhoidal formations, cold water will often prevent further annoyance, when applied directly to the anus on a sponge, and also by injection into the bowel of a small quantity. The method of sponging the parts must be carried out systematically and regularly. To be successful, a large natural color sponge (one not bleached) must be secured about the size of one's fist.[2] This is soaked in cold water, and pressed against the anal region until all the fluid is extracted, and this procedure is repeated anywhere from fifteen to twenty-five times. The application of the water should be made both night and morning, and especially after a stool, when a protrusion is most liable to occur. The enemata need only be employed just prior to the time when the bowels are ordinarily evacuated. Sometimes considerable benefit is derived from an injection of a small quantity of cold or even ice water into the rectum, immediately after the movement of the bowels, and retaining it as long as possible.

For the relief of inflamed hemorrhoids, Dr. D. G. Gant[3] advises the use of the following simple ointment, which is very effective:

℞. Morphinæ sulphatis.....gr. viii		5
Hydrargyri chloridi mitis.....gr. xii		7
Vaselini .....ʒi	30	

M. Sig.: Apply freely in the rectum to the tumors and about the anus. Always bathe the parts with hot water before applying the salve.

The tendency of piles to bleed may be stopped by the use of suprarenal extract, either in the form of an ointment or a suppository, ten grains to a dram when used in a salve, and in doses of five grains when a suppository is employed. The prolapsing of the tumors is best arrested by the use of cold water, as previously advised. A useful suppository, in this connection, is one advised by Dr. James P. Tuttle:[4]

℞. Ichthyol	
Tannic acid, āā.....gr. v	3
Ext. belladonnæ	
Ext. stramonii, āā.....gr. 1/3	02
Ext. hamamelis .....gr. x	6

M. Ft. suppository No. i.

Operative Measures.—Of these methods I have only time to give a brief summary of the opinions I have formed regarding five of the methods, to-wit: 1, Divulsion; 2, injection; 3, ligature; 4, clamp and cautery; and 5, Whitehead's operation.

1. DIVULSION.—This operation, done under nitrous oxid gas and oxygen, often exerts a most beneficial temporary effect, especially when a patient is suffering from strangulated piles and refuses any more radical treatment. Relief for a time is obtained thereby also from constipation, but the effects, I regret to state, are not permanent unless the patient adheres to the rules laid down for the prevention of costiveness. The operation of divulsion is an essential preliminary step to the treatment of a patient by the Martin, of Philadelphia, injection method, the details of which are soon to be published by the son.

Under gas, muscular relaxation does not obtain as in the use of ether. Hence dilatation under gas can be more rapidly induced, as we have the sphincteric rigidity as a guide in knowing exactly how much force may be employed in the individual case. The operation consists in overstretching the muscles with either the fingers or thumbs, or both, until all spasm is overcome. Care must be exercised not to tear the parts. My experience with this method, employed especially for the cure of fissure (irritable ulcer of the anus), enables one to say that the time occupied in the performance is less than half that under ether.

This operation is, therefore, indicated for the temporary relief afforded in a case of strangulated piles, when other operative measures are refused by the patient, and as a preliminary step to the treatment of piles by the injection method.

2. INJECTION.—Radical cures are effected by this means. Various formulæ are advocated. The principal difference in the methods being (1) in the use of strong solutions in large quantities, which cause a necrosis of the entire hemorrhoidal tumor; and (2) the employment of weaker solutions and smaller portions which, as my friend, Dr. James P. Tuttle,[3] expresses it, "produces an inflammatory induration and choking of the circulation, which is followed by shrinking and atrophy of the piles without ulceration or sloughing." In a paper, "The Treatment of Hemorrhoids by the Injection Method," reprinted from the *Therapeutic Gazette*, August, 1897, I detailed the method which I at that time employed, and expressed the conviction that the plan of treatment was efficient and satisfactory. (My later experience in this line I gave in a paper at the annual meeting of the Pennsylvania State Medical Society, Sept. 26-29, 1904.)

3. LIGATURE.—Some of my distinguished colleagues regard the use of the ligature as the ideal operation for the radical treatment of hemorrhoids. Dr. Joseph M. Mathews[5] states, quoting Erichsen, that "all external piles should be cut off, and all internal piles tied, and that he (Mathews) does not think that the advice then given can be improved on, even to this day. I am certain that in the hands of my skilled friend the operation proves all that he claims for it.

4. CLAMP AND CAUTERY.—This is the procedure which holds my preference over all other methods for the radical cure of hemorrhoids. A brief summary of the reasons why I view the operation in this light consists (1) in the fact that patients suffer the least pain; (2) that their recovery is quickest; and finally (3) that the constitutional effects, such as inability to urinate without catheterization, is least disturbed. The time required for a cure to be effected by this operation is at the outside two weeks. A patient after the operation has the bowels moved on the third day; is allowed to get out of bed on the fifth to the seventh day, and then is permitted to go home in from seven to ten days.

5. WHITEHEAD'S OPERATION.—I have never performed this operation, being unable to bring myself to a belief that the cases of hemorrhoids which have come under my observation justified the risks attending its performance. Not only are all the delicate structures in the anal region removed by this procedure, but there is also the grave possibility of a stricture following, should healing not occur by primary union. The plan of operation, in itself, reflects considerable credit on the ingenuity of its distinguished originator. I question, however, it ever reaching a popular professional employment.

2. The size of the sponge refers to one in the dried state.

3. Diseases of the Rectum and Anus, second edition, 1902, p. 431.

4. Diseases of the Anus and Rectum and Pelvic Colon, 1902, p. 617.

5. A Treatise on Diseases of the Rectum, Anus and Sigmoid Flexure, New York, 1892, p. 158.

Dr Charles M. Kelsey[6] epitomizes this entire subject in the following advice given to students attending his clinic:

If you wish to radically cure your patients with the least possible pain, loss of time, confinement to the house, and risk of accident, use the clamp and cautery.

If you wish to accomplish the same results with no more risk, but with more pain, more local and general disturbances, use the ligature.

If you wish to take an hour to do what can as well be done in a few minutes, and gain nothing more by it in the results, use Whitehead's operation.

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PRE-OPERATIVE AND POST-OPERATIVE TREATMENT OF SURGICAL CASES.*

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NEW ORLEANS.

The question has often occurred to me that some surgeons at least view all therapeutic measures as more or less empirical or useless, and lay too much stress on what can be accomplished by operative procedure alone.

Specialists in any given line are prone to look on any given subject from their point of view; in fact, we are of the opinion that many surgical cases before operation are not treated as they should be, so as to prepare them for the great ordeal and shock incident to a major operation, and as a result of this lack of treatment or proper preparation before operation, they are likely to have to be overtreated after or during the operation.

As a matter of course, in emergency surgery, we often have no time for general treatment, but many other surgical cases are materially benefited by proper attention to their general health, the careful flushing out of the bowels, kidneys and liver; the regulation of the heart as to its beat and tone; respiration as to its depth and regularity, and the proper building up of the nervous system and the blood count by suitable medication.

We have seen much good result from dieting, tonic capsules of iron, quinia, strychnia and cascara or liquid preparation of iron and manganese preceding some operation, especially in anemic malarial subjects, which, without the previous building up, would hardly have been able to undergo the shock of any serious operative interference. In other cases, where the long drain of chronic diseased conditions have undermined the nervous and circulatory systems, much good may be accomplished by giving digitalis, strychnia and iron, till the heart is toned down by digitalis, and the nervous system braced up by the action of the strychnia and the blood count built up by the iron. As a matter of course, no imperative operation should be made to wait for the result of such medication, but the idea that we mean to convey is that when any such case may have to wait from any cause, the period of such waiting should be utilized in the general up-building of the patient's vitality.

Many times surgeons are called on to operate on patients who have led rather fast lives; who have not only burned the candle at both ends, but have overtaxed the stomach, overworked the liver, and kept the kidneys choked with excrementitious material which should have been flushed out. All such cases are very much benefited by thorough purgation with calomel and soda, or any other simple cathartic, if mercury is contraindicated. The thorough emptying of the bowels and stimulation of the secretions does away with half of the vomiting, which we have seen in cases which have not been properly purged before the operation.

Regulation of diet for several days previous to an operation so that no indigestible material is left in the alimentary tract, is another important detail to look after. The greater the quantity of water imbibed and the better the kidneys and bowels are flushed out, the better the chance for the patient to stand the operation.

In emergency operations one-fourth grain of morphia, enemas of hot milk, coffee and whiskey all tend to ward off shock. In any serious operation, Professor Smith recommends the previous administration of whiskey almost to the point of intoxication.

This plan is more suitable for subjects accustomed to drink than to follow as a general rule. The application of bandages formerly recommended to store up blood in the extremities is not practiced to any extent at present, but the saving of all the blood possible by the Esmarch bandages and the elevation of the limbs to be amputated, is doubly important in all very young or old subjects.

Mikulicz found that blood regeneration in an operation in which 1 per cent. of blood was lost, was made up in from two to five days; that 3 per cent. was made up in from five to fourteen days, and 4 per cent. was regenerated within thirty days. Usually we expect the blood regeneration to be complete within fourteen days. Mikulicz never operates on a patient whose hemoglobin is under 30 per cent. In all anemic and accident cases, where a great amount of blood has been lost, this 30 per cent. hemoglobin test is a good rule to follow, waiting, if possible, to build up the hemoglobin to the required 30 per cent. standard before operation.

We often see mucous patches and syphilitic ulceration of mouth, tongue and throat that in some degree resemble epitheliomatous growths so closely that it is hard to differentiate between the two. Recently such a case came under my observation, under the treatment of a throat specialist, who informed the patient that he had cancer of the tongue and tonsils, and must undergo a complete removal of those organs with all the deformity and consequent inconvenience incident thereto. The pathologist had examined the tumor and reported it an epitheliomatous growth. It certainly looked suspicious, and had a cancerous history, but behind all of this was also a vague syphilitic history. The patient refused to be operated on without seeing another specialist, who, on consultation, decided to try the test of free administration of iodid of potash and mercury, so the patient was given 20, 30 and 40-grain doses of iodid of potassa three times daily, well diluted, after meals, combined with protoiodid mercury pills. The effect of the treatment began to show after the first week, in diminishing the size of the ulcer and causing it to become paler and less hemorrhagic. Two weeks noted more marked improvement, and within a month the tumor had disappeared and the ulcer healed. In all cases of ulceration about the throat and tongue in syphilitic suspects, give the test treatment with iodid of potash and mercury, before any operative procedure is suggested. The time required for the test is only one month. The power of iodid of potassa and mercury in effecting such cures is almost miraculous. This recommendation, if followed, will clear up many suspicious diagnoses.

So much for pre-operative treatment. Let us now

6. The Treatment of Hemorrhoids, New York Med. Jour., June 16, 1894.

turn our attention to the patient who, from loss of blood, shock and anesthesia, or any other cause is *in extremis,* as the antiseptic details of modern surgery tend to prolong operations and to the production of shock.

We can hardly speak of post-operative treatment without going into the definition and details of shock. The demand for treatment is usually brought about by the loss of blood, shock or fat embolism. The essential condition of each is anemia of the brain, fast, weak-acting heart, inhibition of nerve force, with reflex paralysis, exhaustion of the active force of the medulla oblongata and spinal cord, accompanied by subnormal temperature. The weakness of the heart's action, combined with the paralysis of the vascular tone disturbing the circulatory balance, the abdominal veins become overfilled by gravitation, and the right side of the heart is greatly distended. These conditions necessarily lessen the amount of blood in the arteries. If this arterial pressure is very much lessened, anemia both of the lungs and brains soon follows. A slight degreee of shock may follow almost any traumatism or great loss of blood, but it is more severe in contusions and gunshot wounds of the viscera, crushing injuries of the extremities and testicles, and to burns and scalds extending to half or more of the body surface. We can differentiate hemorrhage from shock to some extent by the blood count, which should not fall below 3,500,000. The nature of the injury will also assist in making the diagnosis. In shock, circulation is vitally depressed. It is supposed in the case of crushed limbs to be brought about by nervous exhaustion, caused by continuous and severe irritation of peripheral, sensory and sympathetic nerves.

Rogers, in experimenting on frogs that he had shocked by electricity, observed that the spinal cord and muscles were not sensitive to drugs or stimuli, as, for example, strychnin failed in its effect on the spinal cord. The tissues seemed to be unable to react, or the strychnin seemed to fail of passage from the blood to the tissues. These experiments in part explain some of the observations of Crile, namely, that powerful, stimulating remedies fail in their mission to relieve exaggerated shock, and when given in too large doses may result in an absolute toxic effect on the patient. The following observations of Crile, while some of them are contrary to our clinical experience, are worthy of note in this connection. Crile contends that nitroglycerin, strychnia, alcohol and all other stimulants of vasomotor centers tend, like traumatism, to the production of shock.

Where the operative field invades a part rich in blood vessels and hemorrhage is hard to control, the amount of blood lost is often great in quantity, even though we use all the precautions possible by immediately clamping or tying every vessel that spurts. It is after such operations and in collapsed conditions that intravenous infusion and hypodermoclysis accomplish such good results by raising blood pressure, stimulating the endocardium, thus exciting the heart to action, filling up the empty blood vessels and stimulating the anemic brain. The amount of saline infusion should be governed by the amount of blood lost and its effect on the pulse. It is better to stop at two pints, if the pulse is restored, taking the chances of having to repeat it again if required, rather than to bring about pulmonary edema, for Crile found when the infusion amounted to 320 c.c. kilo., the fluid accumulated in the splanchnic area and embarrassed respiration by mechanical fixation of the diaphragm and ribs. We have seen pulmonary edema increased and damage done by using intravenous infusion in a case of albuminuria with suppression of urine.

Crile had the most lasting effect when to his saline infusion he added 1/50,000 adrenalin. He resuscitated animals that had been dead for ten (?) minutes by these infusions, combined with rhythmic pressure on the pericardium and artificial respiration.

We may have delayed shocks after an operation is completed, hence the importance of keeping the patient quiet and comfortable, with the foot of the bed raised, if much blood has been lost. During collapse the best clinical results are obtained medicinally by the hypodermic administration of 1/30 grain of strychnia, combined with 1/60 grain digitalin. If we could foretell, in any given operation, that shock was liable to occur, it would be well to reinforce our patient by giving him either a stiff toddy, ¼ grain of morphia, 2 grains citrate caffein, or a hot cup of coffee an hour or two before operating.

When from any cause serious or profound shock is produced, only the necessary interference to check the hemorrhage and stop the pain should be attempted, and even that should be done without the aid of anesthesia; morphia, under such circumstances, acting better than ether or chloroform. The exception to this rule is when the shock seems to be aggravated by a crushed painful limb; it is better to amputate under the influence of morphin and ether, thus removing the cause of the shock. The blood should be forced into the more vital parts by raising the limbs, if not injured, rather than by bandaging the extremities. Dry heat and mustard with friction to be applied freely, flannel cloths wrung out of hot water and sprinkled with turpentine should be applied over the precordial region. In some of these cases the most powerful stimulation fails to act. When, from either shock or anesthetic, respiration or circulation stops from anemia of the medulla oblongata, the head-down, inverted position, combined with artificial respiration with rhythmic pressure on the heart, affords the best chance for relief. Artificial respiration, with chest compression, not only brings in new oxygen, but expels whatever chloroform or ether vapor remains with the residual air. It is then that artificial respiration, lowering the head, infusion and faradization come to our relief. With one pole of the battery over the phrenic nerve and the other over the diaphragm, we can tide over some cases that otherwise might prove fatal. We should not try to force hot, stimulating drinks down a patient who can not swallow, as fatal strangulation may result, but if deglutition is not impaired, 10-minim doses of the tincture of digitalis dropped on the back of the tongue slows down the fast, weak-acting heart, but its culminative effect should be remembered, and it should not be repeated too often, as cardiac failure might follow overstimulation.

Many times the patient being operated on is not kept warm enough. Moisture from wet towels and dressings are left to be evaporated by the latent heat of the body. During the winter months, in cold climates, at least, the operating room should be kept at 72 F., and with some cases it is best to have the operating table heated by coils of hot water circulating underneath the table. Shock is superinduced by draughts, and at no time during or after an operation should a patient be uncovered except the actual part to be operated on. The patient should be kept warm when going from the operating room to his private bed, which should be well heated

before he is moved into it. In all our treatment, to bring about reaction, we should stop short of producing overaction and its sequence, which is secondary hemorrhage. Whenever it becomes necessary to operate on one who is very old it is important to reinforce their vital powers by a tonic course of strychnia a week or more before the operation, as it does much more good in this way than when given on the operating table. Confinement in bed is very damaging to these old people; they ought to be propped up in bed, or removed to a chair just as soon as it is practicable. It is important that operations on old persons be as bloodless as possible.

In these conditions of post-operative shock, do we not, under some circumstances, overtreat the case? Many times, with the heart scarcely beating for the lack of blood stimulation, with respiration sighing and shallow, with patient bathed in cold perspiration, we have seen one hypodermic injection after another containing stimulating poisons given in such quick succession that we may well pause to ask ourselves the question, are we not confusing and overpowering a circulation and respiration almost extinct by the rapid successive administration of such strong drugs as nitroglycerin, strychnia, digitalin, atropin and morphin into a subject already overpowered by a general anesthetic, loss of blood, shock and collapse? Under the excitement of such conditions, proper time very often does not elapse from one dose to another to see what the effect will be. Again, drugs having diametrically opposite effects are often used and stored up in the system. We are not claiming this to be a common practice in well-regulated operating rooms, but I am sure that many of us have witnessed cases in which the postoperative treatment was overdone.

It has always been my idea that, if surgeons would spend more time in getting the patient in proper condition to stand the operation, in having everything in readiness, in having assistants trained in what they are expected to do, and also if the least possible time were consumed in performing the operation, and if all lectures and explanations were suspended until the operation is finished; much less of the first necessary poison, viz., the anesthetic, would be required, and we would have fewer cases *in extremis* to deal with after operations.

THE MECHANISM OF STREPTOCOCCUS INFECTION.*

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[From the Memorial Institute for Infectious Diseases.]

CHICAGO.

[Work aided by a grant from the American Medical Association.]

INTRODUCTION.

Although a great deal of work has been done on the mechanism of streptococcus infection, both with normal and with immunized animals, many points are still left entirely in the dark. In the experiments described in this paper, an attempt is made to throw additional light on some of these points, but on account of the many inherent difficulties, the results which I have achieved by no means exhaust the problem.

Shortly after the publication of his classical paper on phagocytosis in daphnia, Metchnikoff[1] made a study of phagocytosis of streptococci in the human body, in cases of erysipelas. He concluded from his observations that streptococci gain entrance through abrasions of the skin, multiply and set up an inflammation. At the same time there is a gathering of microcytes about the streptococci, and these soon take up the latter and destroy them. Macrocytes also are found in considerable numbers, but they do not take up the streptococci, but have, nevertheless, a phagocytic action, in that they take up and remove dead and disabled microcytes.

In 1895 Denys and Leclef[2] studied the mechanism of immunity in rabbits which had been repeatedly injected with small but gradually increased doses of virulent streptococci. Their conclusions may be briefly stated as follows: Immune rabbit serum is not as good a culture medium for streptococci as normal serum, but it does not possess any marked streptococcidal powers. The cell-free fluid from a leucocytic exudate retards multiplication of virulent streptococci and sometimes kills them. Normal leucocytes in normal serum, and leucocytes from an immune rabbit suspended in normal serum, do not greatly retard multiplication of virulent streptococci. Leucocytes from a normal rabbit, or those from an immune rabbit, suspended in immune rabbit serum rapidly take up and destroy virulent streptococci. The serum has acquired something in the process of immunization which neutralized something in the cocci, by virtue of which they were protected against phagocytosis.

Denys and Marchand[3] showed that there is better phagocytosis of virulent streptococci when inoculated into a suspension of rabbit's leucocytes in normal rabbit serum, to which had been added 1 per cent. of immune horse serum, than when they were inoculated into the same mixture of leucocytes and rabbit serum, with the addition of 1 per cent. of normal horse serum.

Bordet[4] was able to find no protection against streptococci in normal and in immunized rabbits and guinea-pigs, except that due to phagocytosis. If a rabbit was treated with antistreptococcic serum, and later injected with several times the minimum fatal dose of streptococci, the organisms were all taken up by phagocytes and destroyed. In untreated rabbits he also found phagocytosis, but the organisms soon got the upper hand and the rabbit died of streptococcus infection.

Marchand[5] studied phagocytosis of virulent and non-virulent streptococci, and came to the conclusion that the failure on the part of the leucocytes to take up virulent streptococci depends on a physical property of the organisms and not on a secretion. Tchistovitch[6] injected rabbits intravenously with fatal doses of a highly virulent streptococcus, killed the animals in one-fourth to six hours, and examined the organs for evidence of phagocytosis. He was always able to find some phagocytosis in the lungs and in the liver of these animals, and concluded that this phagocytosis of virulent streptococci may be due to the fact that every culture contains some cocci which are less resistant than others, and that those are the only ones which are taken up by the phagocytes.

Simon[7] found very little evidence of phagocytosis, *in vitro*, when rabbit's leucocytic exudate was inoculated with a non-virulent streptococcus The washed

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Virchow's Archiv, 1887, vol. cvii, p. 209.
2. La Cellule, 1895, vol. xi, p. 177.
3. Quoted from Denys, Centralbl. f. Bact., 1898, vol. xxiv, p. 685.
4. Annales de l'Institut Pasteur, 1896, vol. x, p. 104, and 1897, vol. xi, p. 177.
5. Archiv de Méd. Exper., 1898, vol. x, p. 253.
6. Annales de l'Institut Pasteur, 1900, vol. xiv, p. 802.
7. Centralbl. f. Bakt., 1901, vol. xxix, pp. 81 and 113.

leucocytes suspended in salt solution, and also the cell-free exudate, killed non-virulent streptococci, but not the virulent organisms. Leucocytic exudate mixed with rabbit serum had no effect on non-virulent streptococci. He was unable to confirm the view advanced by Bordet and others that a rabbit which is injected with streptococci into a pleural cavity containing leucocytic exudate can stand a larger dose than can a rabbit of the same size which is injected in the normal pleura. The pleural exudate was produced by the injection of aleuronat suspension forty-eight hours previously. These results are quite contradictory to those of other investigators, and it was, therefore, thought desirable to repeat these experiments with leucocytes.

EXPERIMENTS WITH LEUCOCYTIC EXUDATE IN VITRO.

A large Belgian hare was injected in each pleural cavity with 10 c.c. of aleuronat suspension, and bled to death in from eight to ten hours later. About 30 c.c. of thick exudate, containing chiefly polymorphonuclear leucocytes, was obtained and used in the experiment which is tabulated in Table 1. No sodium oxalate solution was added to this exudate, as this salt is strongly streptococcidal, but the coagulation of the exudate was prevented by occasional agitation of the tubes during the first hour. The contents of each tube were 2 c.c., which were inoculated with three loopfuls of a twenty-four-hour broth streptococcus culture, and three loopfuls were plated at intervals. Tube 8 differs from Tube 7, in that it contains the washed leucocytes which had been centrifugated out of 2 c.c. of the exudate, suspended in rabbit serum, whereas Tube 7 contained a mixture of 1 c.c. of the entire exudate +1 c.c. of serum. The fluid of the exudate in Tube 8 was removed to show that the effect of these mixtures is not due entirely to the liquid portion of the exudate, but in a large measure to the leucocytes. The table shows that non-virulent streptococci are destroyed by the leucocytic exudate, by mixtures of leucocytes and serum, by leucocytes and defibrinated blood, and by the cell-free exudate. Defibrinated blood and serum alone, the heated exudate and a suspension of leucocytes in salt solution have little or no effect on these organisms. The virulent streptococcus is not destroyed by the leucocytic exudate. Smears made from these tubes in from one to two hours showed evidence of phagocytosis, but this is most easily demonstrated in tubes containing suspensions of leucocytes in serum. Table 2 shows the same experiment as that shown in Table 1, except that guinea-pig's leucocytes and blood were used. With these leucocytes the eighteen-hour plates are often sterile, or nearly so, while it is only occasionally that they are sterile when rabbit's leucocytes are used.

TABLE 1.—Showing the effect of rabbit's leucocytic exudate and mixtures of exudate and body fluids on streptococci.

Streptococci.		Immediately.	3 hrs.	18 hrs.
300	Leucocytic exudate	4600	0	10000
300	Exudate 58° for half hour	3250	8000	Many
300	Cell-free exudate	4800	1400	3000
300	Defibrinated blood	4800	4700	Many
300	Blood 1 c.c. + exudate 1 c.c.	4000	750	1500
300	Rabbit serum	4200	4200	Many
300	Serum 1 c.c. + exudate 1 c.c.	5200	1100	Many
300	Leucocytes in serum	5000	900	Many
300	Leucocytes in NaCl sol.	4900	5000	Many
324	Leucocytic exudate	420	11	Many
324	Defibrinated blood	430	7000	Many
324	Blood 1 c.c. + exudate 1 c.c.	750	540	Many
324	Rabbit serum	552	6500	14000
324	Serum 1 c.c. + exudate 1 c.c.	320	1	Many
B104	Leucocytic exudate	3500	3600	Many
270	Leucocytic exudate	1700	2	Many

Sources of streptococci: Nos. 300 and 324 from the heart's blood of scarlet fever patients, postmortem. No. B104 from an abscess in a guinea-pig which had been injected with a fungus. This organism has been passed through 78 rabbits and is very virulent for both rabbits and guinea-pigs.

TABLE 2.—Showing the effect of guinea-pig's leucocytic exudate and mixtures of exudate and body fluids on streptococci.

Streptococci.		Immediately.	3 hrs.	18 hrs.
300	Leucocytic exudate	6500	70	170
A	Leucocytic exudate	650	600	Many
B104	Leucocytic exudate	8000	10000	Many
300	Cell-free exudate	5500	800	6000
B104	Cell-free exudate	8000	10000	Many
300	Defibrinated blood	6000	5000	Many
300	Defibrinated blood + leucocytes	6800	240	72
300	Serum	6000	6000	Many
300	Serum + leucocytes	6000	2000	Many

Streptococcus No. 300 is not virulent for guinea-pigs. Nos. B104 and A are virulent. No. A was isolated from a peritonsillar abscess following an attack of follicular tonsilitis and was used in this experiment in the first generation on artificial media.

EXPERIMENTS WITH LEUCOCYTIC EXUDATE IN VIVO.

In order to determine whether a rabbit is more resistant when injected in a pleura containing leucocytic exudate than when injected in the normal pleura, the following experiments were carried out:

EXPERIMENT A.—A gray rabbit weighing 1,450 grams was injected into the right pleura with 7 c.c. of aleuronat suspension. Fifteen hours later 2 c.c. of a 40-hour culture of a virulent streptococcus were injected into this pleura and also into the right pleura of a normal rabbit weighing 1,500 grams. The normal rabbit was found dead in 18 hours, and the one which had been previously injected with aleuronat died 45 hours later.

EXPERIMENT B.—A gray rabbit weighing 2,100 grams was injected in the right pleura with 6 c.c. of aleuronat suspension. Eighteen hours later 1 c.c. of a 24-hour culture of a virulent streptococcus was injected into this pleura and also into the right pleura of a normal gray rabbit weighing 2,150 grams. The normal rabbit died in about 18 hours, while the aleuronat rabbit died only after 45 hours—21 hours after the death of the control.

The experiment was now varied so that the conditions were the same as in Simon's experiments.

EXPERIMENT C.—A rabbit weighing 1,700 grams was injected in the right pleura with 8 c.c. of aleuronat suspension, and 48 hours later this rabbit and a normal rabbit weighing 1,700 grams were each injected in the right pleura with 1 c.c. of a 30-hour streptococcus culture. In this experiment the aleuronat rabbit died in 24 hours, while the control lived for five days.

EXPERIMENT D.—A rabbit weighing 1,800 grams was injected in the right pleura with 9 c.c. of aleuronat suspension. Forty-eight hours later this rabbit and a normal rabbit weighing 1,800 grams were each injected in the right pleura with 1.5 c.c. of a 24-hour streptococcus culture. The normal rabbit died in 37 hours, while the aleuronat rabbit died in 45 hours—eight hours after the death of the control.

The results of the last two experiments agree fairly well with those obtained by Simon, and we may now ask why they are different from the results of Experiments A and B. Apparently, this difference is due to the fact that in Experiments C and D the inoculation was made some thirty hours later than in Experiments A and B.

That this is the correct explanation is indicated by the following experiment:

EXPERIMENT E.—A rabbit weighing 2,300 grams was injected in the right pleura with 9 c.c. of aleuronat suspension. Forty-eight hours after this injection the rabbit was bled to death, and on opening the pleural cavity it was found to contain no leucocytic exudate.

Had this rabbit been inoculated in the right pleura forty-eight hours after the injection of the aleuronat suspension, the inoculation would not have been made into leucocytic exudate. That being the case we would not expect that this rabbit could stand a larger dose of streptococcus than a normal rabbit. In Simon's experiments, however, the inoculations into the pleural cavity were made forty-eight hours after the injection of aleuronat, and this is probably the reason why he did

not find these rabbits more resistant than normal rabbits. Had he made his inoculations within twenty-four hours after the injection of aleuronat his results would very probably have been different.

EXPERIMENTS WITH ORGAN CELLS.

It seems quite reasonable to suppose that the organ cells might play an important part in the protection of the body against invasion by streptococci, and with this point in mind the following experiment was carried out:

EXPERIMENT.—Two guinea-pigs, A and B, were bled to death and the blood collected under aseptic precautions. The organs were now carefully removed from the body, placed in sterile glass dishes and rubbed up; A with guinea-pig's serum, and B with defibrinated guinea-pig's blood. The organs and blood were not allowed to become cold. The suspensions of organ cells were now introduced into small test tubes, inoculated with two loopfuls of a 24-hour broth culture of a non-virulent streptococcus, and two loopfuls were plated at intervals. The colonies that developed in each plate were carefully estimated and the results are shown in Table 3. In no instance did the suspension of organ cells have an inhibitive effect on the multiplication of the streptococci, but on the contrary the organisms multiplied more rapidly in these suspensions than in either the serum or the defibrinated blood alone. If, however, bone marrow was added to the defibrinated blood or serum, the number of streptococci in these tubes was greatly diminished during the first three to five hours.

TABLE 3.—Showing the effect of suspensions of organ cells of guinea pigs on streptococci.

Streptococcus.		Immediately.	3 hrs.	18 hrs.
B104†	Defibrinated blood	1800	1600	1500
B104	Blood + muscle	2000	8000	Many
B104	Blood + spleen	1900	Many	Many
B104	Blood + liver	1800	Many	Many
B104	Blood + kidney	1900	Many	Many
B104	Blood + adrenal	1500	Many	Many
B104	Blood + lymph gland	1500	6000	Many
300	Blood + bone marrow	2500	1000	Many
300	Serum	3800	3750	6000
300	Serum + leucocytes	2700	1800	1500
300	Serum + spleen	2800	5000	Many
300	Serum + liver	2000	12000	Many
300	Serum + kidney	2400	12000	Many
	Control liver + serum	0	3	9
	Control spleen + serum	0	0	0

†The strain of streptococcus B104 used in this experiment has not been passed through rabbits, and has lost its virulence.

These results agree with those found by Bail and Petterson[8] in their study of the mechanism of anthrax immunity in chickens, and show that suspensions of organ cells from the guinea-pig possess no streptococcidal power except the suspensions of bone marrow. Suspensions of marrow cells in defibrinated blood or serum kill large numbers of avirulent streptococci, but that is not the case with suspensions in salt solution. These results have also been obtained with suspensions of rabbit's bone marrow.

PHAGOCYTOSIS IN HUMAN INFECTIONS.

During the course of this work I had an opportunity to study a case of acute purulent rhinitis, in the discharge of which streptococci were found in pure culture.

Patient.—A man 27 years of age. During the first two days the discharge was clear and watery and contained very many streptococci in short chains and in diplococci. Figure 1 shows a photomicrograph of a smear made on the second day. There were only a few leucocytes, and those did not contain any streptococci. On the fourth day the discharge had become thick and purulent, and smears made at that time presented an entirely different picture. There were no free streptococci, but very many leucocytes, some of which were loaded with streptococci. Figure 2 shows a photomicrograph of such a preparation made on the fourth day. The purulent discharge continued for about a week, and during this time it was easy to find leucocytes in the smears which contained large numbers of streptococci. The streptococci finally disappeared, and the patient made a complete recovery.

In this case of streptococcus infection, phagocytosis of the organisms by the leucocytes seemed to be an important factor in combating the infection. In the smears made on the fourth day no free streptococci could be found, although diligent search was made for them. Plates made with a small quantity of discharge, which was obtained high up in the nares by means of a sterile cotton swab, contained, however, many colonies of streptococci after twenty-four hours' incubation. The fact that many colonies developed in the plates, although no free streptococci could be found in the smears, seems to indicate that the organisms were not dead when they were taken up by the phagocytes, but were taken up alive. It is possible, however, that there were free streptococci in this purulent discharge, even though they were not found in the smears.

PHAGOCYTOSIS OF LIVING STREPTOCOCCI IN VIVO.

The following experiment was, therefore, made to show more conclusively that there is phagocytosis of living streptococci in the animal body:

EXPERIMENT.—A guinea-pig was injected in the right pleura with 7 c.c. of aleuronat suspension. Twelve hours later he was injected in this pleura with 2 c.c. of an 18-hour glucose broth culture of a non-virulent streptococcus, and two hours after this injection he was bled to death. Several cubic centimeters of leucocytic exudate were now taken from the right pleura, under aseptic precautions. Smears made with this exudate contained no free streptococci, but many of the leucocytes contained cocci in large numbers.

Figure 3 is a photomicrograph of one of these smears showing streptococci in the body of a leucocyte.

Preparation of Slides.—By means of a sterile, soft cotton swab a small quantity of the exudate was now gently smeared on each of eight agar-covered slides; the slides were incubated in a moist chamber for from four to six hours, stained and examined under the microscope. The preparation of these slides requires the following special technic: Three ordinary clean glass slides and a heavy watch glass are placed in a large Petri dish and sterilized in dry heat. When the Petri dish has cooled sufficiently to be handled the slides are taken out with sterile forceps and hot glucose agar is poured on each to form a uniform thin film. Each slide is immediately replaced in the Petri dish and the agar allowed to solidify. The exudate which contains many streptococci in the bodies of the leucocytes is now gently smeared on these agar films, the watch glass is half filled with sterile water, and the large dish is placed in the incubator for from four to six hours. The water is used to prevent drying of the agar.

Staining.—The slides are now taken out of the Petri dish and dried in a thermostat at 55 C. for from fifteen to twenty minutes, or longer if necessary; fixed in 40 per cent. formalin for four or five minutes, washed in water, stained for only a few seconds with Loeffler's methylene blue solution, again washed in water and dried in the thermostat.

The best stains were obtained when the methylene blue solution was poured over the wet slide, the slide being held so that the stain ran off readily.

The slide is immediately placed in a dish of cold water and gently rinsed in several changes of water. Violent agitation in the water pulls off the film of agar. When the agar is perfectly dry (which requires only about half an hour), a coverglass is placed on it, either in glycerin or Canada balsam. The slides are now ready to be examined with the oil immersion lens.

Examination.—Examination in various stages shows positively that the streptococci in the leucocytes multiply, burst open the cell and form a small colony surrounding the cell

8. Centralbl. f. Bakt., 1903, vol. xxxv, p. 102.

which contained them. Figures 4 and 5 are photomicrographs of such preparations at different stages. In Figure 4 the leucocyte has just been burst open and the streptococci are beginning to grow out of it; in Figure 5 a considerable colony has already formed around the ruptured leucocyte. These colonies may be found in all stages, by varying the time of incubation.

The leucocytes do, however, kill streptococci if the conditions are right, as is shown by the following two facts: 1. Organism No. 300 is not virulent for guinea-pigs, and we have seen that the leucocytes take up the cocci alive. The guinea-pig must destroy these organisms somewhere, and we can find no substance in its body that is capable of doing this except the leucocytes and the bone marrow. We have seen in Table 2 that the leucocytes destroy streptococci *in vitro,* and the inference is that they also destroy them *in vivo.* 2. Plates made with three loopfuls of the exudate when taken from the guinea-pig contained 2,540 colonies of streptococci after twenty-four hours' incubation, while plates made with three loopfuls, after the exudate has stood in a test tube in the incubator for six hours, contained only 480 colonies. Evidently some of the streptococci were killed in this tube, but the smears show that all of the organisms are in the leucocytes, hence they must have been killed in the leucocytes.

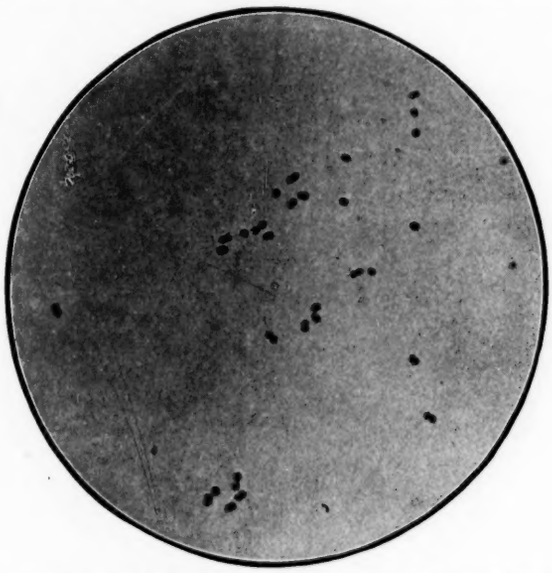

Fig. 1.—Photomicrograph × 1500. Streptococci in nasal discharge on second day of sickness.

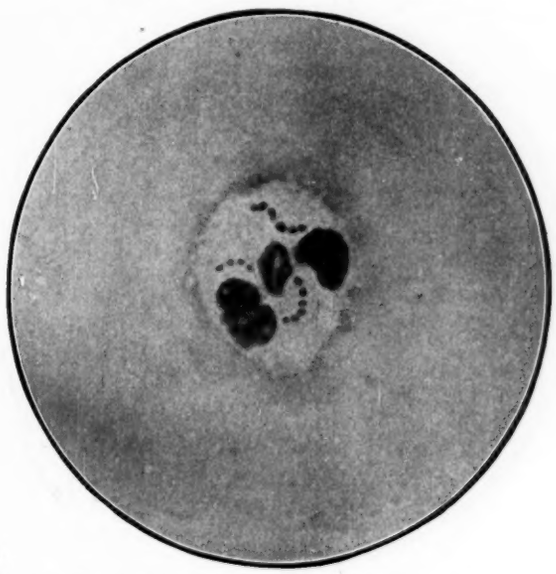

Fig. 2.—Photomicrograph × 1500. Streptococci in a leucocyte from nasal discharge on fourth day of sickness.

THE SO-CALLED STREPTOCOCCUS TOXINS.

The so-called toxin-producing power of streptococci has been studied by a number of investigators.† In 1888 Manfredi and Traversa[9] succeeded in preparing a toxic filtrate from a streptococcus which had been isolated from a case of erysipelas. Four years later Roger[10] prepared a filtrate which killed rabbits in doses of 13 to 20 c.c. per kilogram weight of rabbit. Marmorek[11] got a more powerful toxin by growing a virulent streptococcus in a mixture of bouillon and human serum for three months and filtering. One cubic centimeter of this filtrate killed a large rabbit in three to four days. More recently he[12] recommends a special culture medium containing glycocol and leucin, in which he claims to have obtained powerful toxins. Marmier[13] got a powerful toxin by growing streptococci in peptone solution. He precipitated the toxin from the filtered cultures, and found that the precipitate killed rabbits in doses of 40 mg. Schenk[14] extracted the livers of rabbits which had died of streptococcus infection, with salt solution and filtered the extract. These filtrates and also those of a broth culture of his organism were toxic for mice. Homén and Laitinen[15] prepared a toxin from broth cultures by precipitation with ammonium sulphate. These cultures varied in age from three to thirty days, and apparently were not filtered, hence it is doubtful whether the precipitates were sterile. Lingelsheim[16] found that some strains of streptococci possess a high toxicogenic power, but that they usually lose that property after being grown on artificial media, even if they are passed through rabbits from time to time. He obtained his most powerful toxin from an organism of medium virulence.

Besredka[17] succeeded in preparing filtrates that are strongly hemolytic for red corpuscles of various animals, by growing a virulent streptococcus in heated rabbit serum for eighteen to twenty-four hours and filtering. His filtrates were not toxic for rabbits, but I have shown[18] that filtrates thus prepared may also be toxic. Simon[19] has pointed out recently that the hemolysin and the toxin are probably two different substances, and this may explain why my results do not agree with those of Besredka.

Arohnson[20] found that the filtered broth cultures, varying in age from two to fourteen days, possessed only weak toxic powers, even if the organism was highly virulent. Macfadyen and Rowland[21] prepared a highly toxic extract of streptococci by grinding up the organisms when frozen and reduced to a very low temperature by means of liquid air, and exhausting this mass with salt solution. One-tenth c.c. of this extract killed a guinea-pig in six hours when injected intraperitoneally.

†It should be remembered that it has not yet been shown that any of the so-called streptococcus toxins correspond fully with the dogmatic definition now given of toxin.

9. Quoted from Lingelsheim, Beit. z. Exp. Ther., No. 1, p. 16.
10. Rev. de Méd., 1892, vol. xii, p. 944.
11. Annales de l'Institut Pasteur, 1895, vol. ix, p. 611.
12. Berliner klin. Woch., 1902, vol. xxxix, p. 253.
13. Annales de l'Institut Pasteur, 1895, vol. ix, p. 568.
14. Wien. klin. Woch., 1897, vol. x, p. 937.
15. Ziegler's Beiträge, 1899, vol. xxv, p. 10.
16. Beiträge zür Experimentellen Therapie, No. 1, 1899
17. Annales de l'Institut Pasteur, 1901, vol. xv, p. 880.
18. THE JOURNAL A. M. A., 1903, vol. xli, p. 962.
19. Centralbl. f. Bakt., 1903-4, vol. xxv, pp. 308-440.
20. Berl. klin. Woch., 1902, vol. xxix, p. 981.
21. Centralbl. f. Bakt., 1904, vol. xxxv, p. 415.

Simon has shown that streptococci secrete more toxin when grown in a medium which has some resistance to their development than when grown in a medium which is favorable for their rapid growth. He therefore did not use broth or serum as a culture medium, but used the cell-free fluid from rabbit's leucocytic exudate. The exudate was obtained by injecting the rabbit in the pleura with 6 to 10 c.c. of aleuronat suspension and bleeding it to death the following day. He grew an organism of medium virulence in this fluid for from three to nine days under anaërobic conditions, and passed the culture through a filter. He also prepared a toxin by injecting into the pleural exudate a virulent streptococcus and filtering the fluid found in the pleura after the rabbit had died from the infection. These filtrates killed rabbits in from three to twelve days, in doses of from 4 c.c. to 7 c.c.

At the time of publication of Simon's paper I was working along the same line, and have since been able to confirm his results, as is shown by the following experiments:

EXPERIMENT A.—A mixture of two parts of cell-free exudate and one part of broth was inoculated with a virulent streptococcus (B. 104), incubated for three days and passed through a porcelain filter. One c.c. of the filtrate added to a tube of ascites broth gave no growth in 24 hours. A rabbit weighing 1,335 grams was injected with 10 c.c. of the filtrate. During the first two days the rabbit lost 50 grams and then held his weight, but died on the fourteenth day.

EXPERIMENT B.—A rabbit was injected with 4 c.c. of aleuronat suspension in each pleura, and the following morning he was injected in each pleura with 3 c.c. of a 24-hour culture of a virulent streptococcus. The rabbit was found dead the following morning and 25 c.c. of exudate was obtained from the pleural cavities. This exudate was centrifugated and passed through a filter. One c.c. of the filtrate added to a tube of ascites broth gave no growth. A rabbit weighing 1,690 grams was now injected with 10 c.c. of the filtrate. The rabbit appeared to be ill the next day, but did not die until the end of the fifth day. Cultures made from the heart's blood, liver and spleen remained sterile.

Several other experiments similar to these were carried out, but not all of the animals died from the injection of the filtrate. It is clear, however, that filtrates thus prepared possess a considerable degree of toxicity.

At the suggestion of Professor Hektoen, I tested some of the filtrates to determine whether they are toxic for leucocytes, as has been shown by Van de Velde,[22] and by Neisser and Wechsberg,[23] to be the case with staphylococcus filtrates. The organism used in these experiments is B. 104,[18] which has been passed through 78 rabbits, and is very virulent for rabbits and for guinea-pigs, and produces an active hemolysin when grown in heated rabbit serum or in a mixture of equal parts of rabbit serum and ascites fluid. The filtrates used were from twenty-four to thirty-six-hour cultures in a mixture of rabbit serum and ascites fluid, which had been heated to 56 C. for one-half hour before inoculation.

Neisser and Wechsberg[23] have shown that living leucocytes reduce methylene blue solution when the supply of oxygen is shut off, while dead leucocytes no longer possess this property. In my experiments this fact was made use of to determine whether or not the leucocytes had been killed by the filtrate; 0.3 c.c. to 0.4 c.c. of leucocytic exudate from a rabbit was added to 1.5 c.c. of the filtrate, incubated for two hours, then two drops of a methylene blue solution added and the contents of the tube shaken up and covered with a layer of sterile olive oil. If there was reduction in two hours the result was considered negative, but if there was no reduction in that time this fact was taken as evidence that the leucocytes were dead. Control tubes with a mixture of equal parts of heated rabbit serum and ascites fluid were always made, and the results recorded only when there was marked reduction in the control in two hours. A large number of these experiments was carried out, but it is not necessary to tabulate more than one of them here.

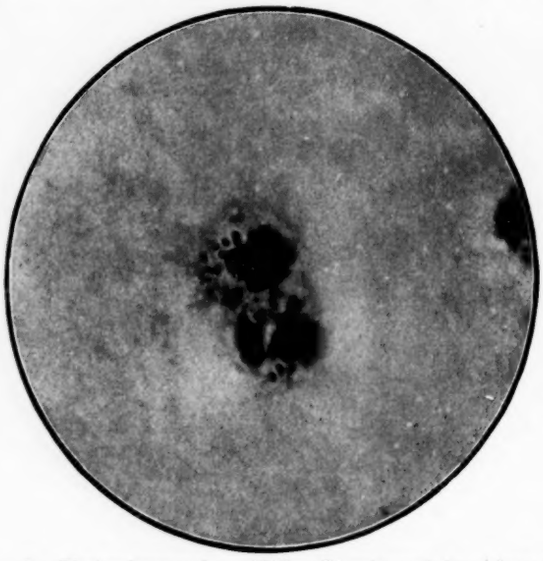

Fig. 3.—Photomicrograph × 1500. Streptococci in guinea-pig's leucocytes, taken from the pleura two hours after injection of streptococci.

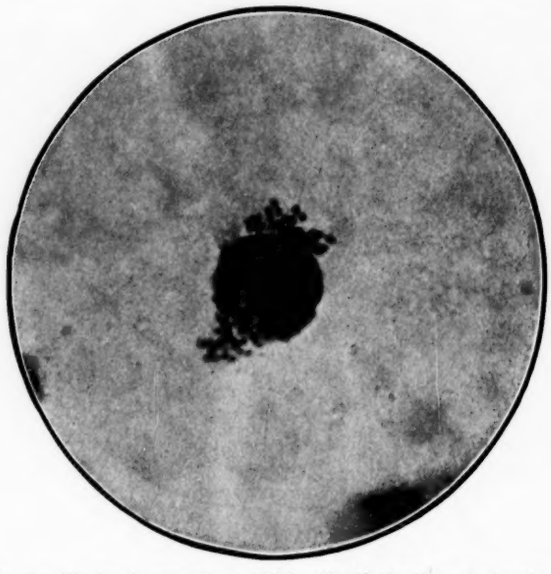

Fig. 4.—Photomicrograph × 1500. Multiplication of streptococci after their ingestion (*in vivo*) by a guinea-pig's leucocyte.

Experiment.—.3 c.c. exudate + 1.5 c.c. 24-hour filtrate; no reduction in 2 hours, but a trace of reduction in 3 hours.
.3 c.c. exudate + 1.5 c.c. 36-hour filtrate; no reduction in 3 hours.
.3 c.c. exudate × 1.5 c.c. ascites-serum;[24] nearly complete reduction in 2 hours.

The leucocytic exudate was obtained from the pleura of a rabbit which had been previously injected with aleuronat suspension. The methylene blue solution was

22. Annales de l'Institut Pasteur, 1896, vol. x, p. 580.
23. Zeitschr. f. Hyg., 1901, vol. xxxvi, p. 299.
24. The term "ascites-serum" as used here refers to a mixture of equal parts of ascites fluid and rabbit serum, heated to 56 C. for one-half hour.

made according to the formula given by Neisser and Wechsberg, which is given below:

Solution A.—Methylene blue, 1; absolute alcohol, 20; distilled water, 29.

Solution B.—1 c.c. of solution A; 49 c.c. of physiologic salt solution.

Two drops of Solution B, which must be sterile, are added to each tube in the experiments.

The fact that the filtrates have a decided effect on leucocytes has also been shown in a second experiment.

EXPERIMENT.—Two cubic centimeters of a rich leucocytic exudate were placed in each of five small test tubes and centrifugated. The clear, supernatant fluid was now decanted from each tube and replaced by 2 c.c. of bouillon, heated ascites-serum or filtrate from a 24-hour ascites-serum streptococcus culture. The leucocytes in each tube were evenly suspended in the fluid, the tubes placed in a water bath at 37 C. and kept there for from 1 to 1½ hours. Now .3 c.c. of normal rabbit serum (guinea-pig serum when guinea-pig's leucocytes were used) was added to each tube, the tubes inoculated with a loopful of a non-virulent streptococcus broth culture and plates made at intervals, the tubes being kept in the incubator.

The following table shows the results of an experiment:

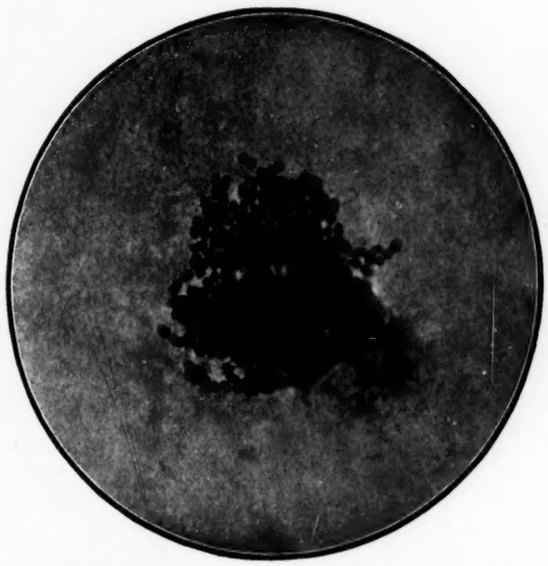

Fig. 5.—Photomicrograph × 1500. Multiplication of streptococci after their ingestion (*in vivo*) by a guinea-pig's leucocyte, in slightly later stage than Figure 4.

TABLE 4.

	Im.	4-5 hrs.	20 hrs.
Leucocytes + 2 c.c. filtrate B 104 †+ .3 c.c. normal serum	2000	3200	Many
Leucocytes + 2 c.c. filtrate 10 A + .3 c.c. normal serum	1200	2000	Many
Leucocytes + 2 c.c. filtrate 300 + .3 c.c. normal serum	1100	24	Many
Leucocytes + 2 c.c. ascites serum + .3 c.c. normal serum	1000	140	Many
Leucocytes + c.c. bouillon + .3 c.c. normal serum	1800	60	Many

†The numbers B 104, 10 A and 300 refer to different strains of streptococci. B 104 has a high virulence and 10 A a medium virulence; both these strains produce hemolysin in heated serum. Although 10 A has never been passed through animals. It was recently isolated from suppurating axiliary glands. 300 is non-virulent, and does not produce hemolysin.

The suspensions of leucocytes in filtrates from serum cultures of virulent streptococci have no effect on streptococci, while the suspensions in filtrates from non-virulent organisms, in heated ascites serum, and in bouillon destroy large numbers of cocci.

These experiments do not always give positive results, but there is a small percentage of tubes in which the filtrate has apparently no effect on the leucocytes. This is not surprising, however, when we consider the fact that in about 100 filtrates which I have tested for hemolysis, there were nearly 10 per cent. that had no hemolytic properties, whereas some of them were so active that .005 c.c. completely laked 1 c.c. of a 2½ per cent. suspension of rabbit's washed corpuscles in two hours.

In all these experiments with leucocytes it is necessary that no time should be lost after the exudate has been removed from the animal. It has been my custom to have all tubes ready and at incubator temperature before the exudate is taken from the animal, so that it can be immediately introduced into the warm tubes containing the serum or filtrates.

The addition of normal serum to the tubes in the last experiment was carried out because it was found that there is less destruction of streptococci by leucocytes when suspended in heated serum than when they are suspended in fresh normal serum. This is shown by the following experiment:

	Im.	3 hrs.	20 hrs.
Rabbit's leucocytes + 1 c.c. normal rabbit serum	750	17	Many
Rabbit's leucocytes + 1 c.c. rabbit serum 60 C. for one-half hour	700	320	Many

The leucocytes contained in each tube had been centrifugated out of 1 c.c. of exudate and were washed three times in .85 per cent. NaCl solution which had been warmed to 38 C.

This result agrees with those of Wright and Douglas,[25] who have shown that human washed leucocytes when suspended in heated serum take up less streptococci, colon bacilli and other organisms than when they are suspended in normal human serum.

Attempts have been made to determine whether the destruction of streptococci by the suspension of leucocytes in serum is a complement action, but these results are as yet unsatisfactory. It is evident that the rôle of the plasma in phagocytosis of streptococci needs to be further investigated.

SUMMARY.

It will be seen that my work corroborates and extends the work of most previous workers in this field.

Leucocytic exudate, the cell-free exudate and suspensions of leucocytes or of bone marrow in serum or in defibrinated blood kill non-virulent, but not virulent, streptococci. Suspensions of organ cells from guinea-pigs, in serum or in defibrinated blood, do not kill streptococci. Leucocytes in the animal body take up living streptococci.

Putting all facts together, it seems that we are warranted in concluding that the leucocytes and the bone marrow are the most important (if not the only) factors concerned in combating streptococcus infections in rabbits and in guinea-pigs. Dr. Weaver and I[26] have shown that normal human serum is a good culture medium for streptococci, and I have shown above that there was active phagocytosis of streptococci by the leucocytes in a case of streptococcus infection in man. It would seem, therefore, that in man also the leucocytes are an important factor in protecting the body against invasion by streptococci.

It was shown in the foregoing that the leucocytes take up living streptococci *in vivo*, and in all probability destroy them, but the fact that the cell-free exudate also destroys many organisms indicates that there may be destruction of cocci extracellularly as well as intracellularly.

Virulent streptococci when grown in heated serum

25. Proceedings of the Royal Society, 1903, vol. lxxii, p. 357, and 1904, vol lxxiii, p. 128.

26. Trans. Chicago Path. Soc., 1903, vol. v, p. 285; Medicine, 1903, vol. ix, p. 515.

secrete a substance which is toxic for leucocytes. This may throw some light on the question why virulent streptococci are not taken up by the phagocytes. The practical value of this demonstration is self-evident. If we accept the view that the leucocytes are the most important agent in combating streptococcus infections, we see at once that the destruction of these cells by the toxin, as they collect about the focus of infection, robs the body of its strongest defense against these organisms.

In conclusion, I wish to thank Professor Hektoen and Dr. Weaver for many suggestions.

ADDENDUM: Since this article was put in type there has appeared an important paper on experimental streptococcus infections by Neufeld and Rimpau.[27] These experimenters have shown that the leucocytes play an important rôle in combating streptococcus infections in rabbits. They have shown also that the addition of antistreptococcus serum to a suspension of leucocytes and streptococci aids phagocytosis, and that this is not due to a stimulation of the phagocytes but to an effect of the serum on the cocci.

CYSTS OF BARTHOLIN'S GLANDS,

WITH BRIEF REMARKS ON THE ANATOMY OF THE NORMAL GLAND STRUCTURE.*

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Bartholin's gland was named after Bartholinus, who described it in detail in the seventeenth century. In 1761 Duverney[1] gave in detail the results of further studies of the gland, and pointed out the resemblance between its tissue and that of the prostate gland; he also mentioned the duct of the gland and demonstrated its opening at the vulva. Huguier[2] (1850) published a most extensive and thorough article on diseases of this gland and referred to it as the vulvovaginal gland.

In 1892 Müller gave a résumé of the literature of the development of Bartholin's glands. He says that they are first recognized in the fetus when it has attained a length of 4.5 cm. Here they are seen as solid cords passing off from the *sinus urogenitalis*.

Pohlman, who has been giving this subject much study in Professor Mall's laboratory, tells me that the beginning of Bartholin's gland becomes apparent just as soon as the first differentiation of sex appears externally. Formerly it was not thought to be demonstrable before the fourth month, but Pohlman has found it in embryos 2 cm. in length. The glands at this time consist of simple pouchings out at the sides of the urogenital sinus. Bartholin's gland in the female corresponds to Cowper's gland in the male. It does not, however, develop so rapidly as the male gland. There is much difference of opinion as to whether Bartholin's gland is ecto- or endo-dermic. Pohlman thinks that it is probably ecto-dermic.

ANATOMY.

These glands are two in number and are situated in the para-vaginal tissue. They are 2 to 3 mm. in diameter and 3 to 5 mm. long. The gland duct passes down on the inner or vaginal aspect and opens into the vagina just below the outer side of the hymen. Huguier, who

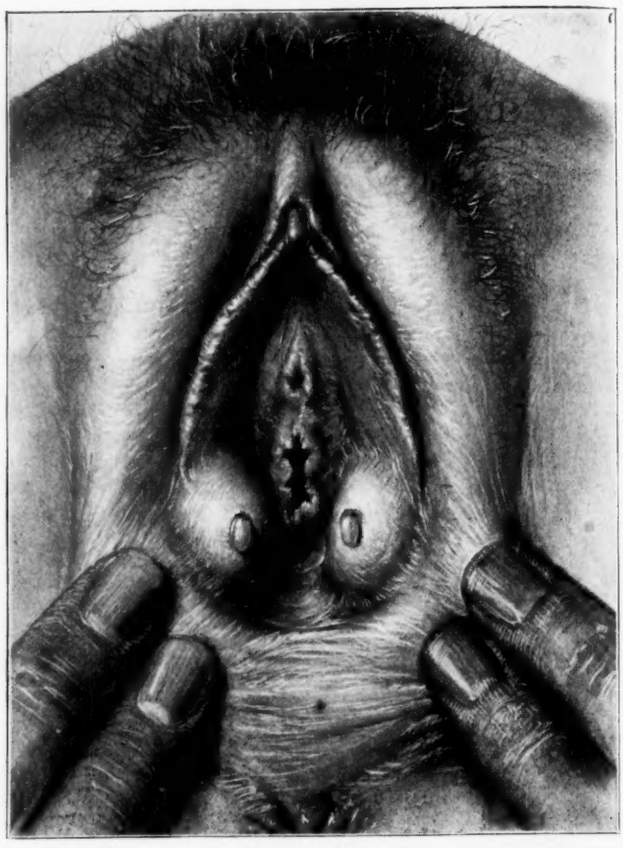

Fig. 1.—Relation of Bartholin's glands to the vagina. (Redrawn after Huguier.) In this case both glands show inflammatory enlargement and from the duct on each side a drop of pus is escaping. The glands are seen in the lateral vaginal walls, a short distance above the fourchette.

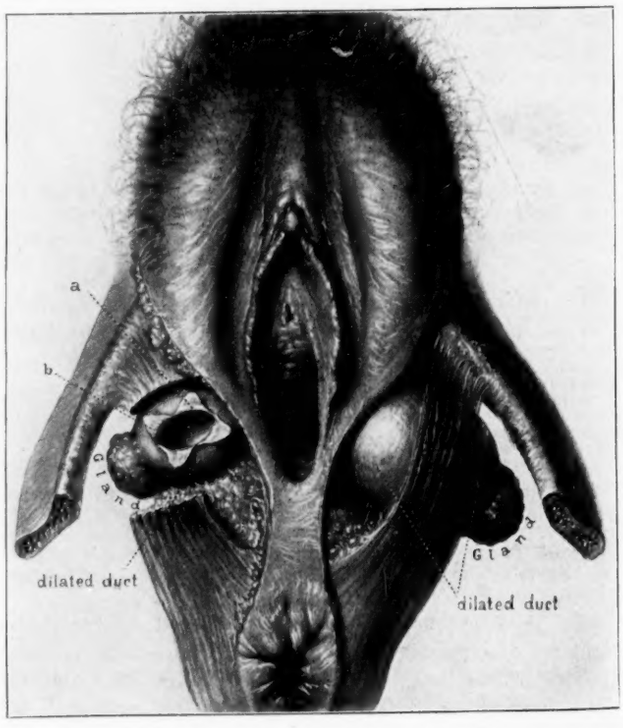

Fig. 2.—Deep relations of Bartholin's glands to the vagina. (Redrawn after Huguier.) In this case the duct to the right of the vagina has become occluded and is cystic, forcing the gland, which is considerably enlarged, further out than usual. On the left of the vagina the duct is also markedly cystic. Under ordinary circumstances the glands lie in the adipose tissue just external to the vagina and are partially covered by the band of muscle shown in the drawing.

27. Deutsche med. Woch., 1904, xxx, p. 1458.

* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

1. Oeuvres anat., Paris, 1761, vol. ii, p. 319.

2. Mémoire sur les maladies des appareils sécréteurs des organes génitaux externes de la femme. Mémoires de l'Académie de Médecine, Paris, 1850, vol. xv, p. 531.

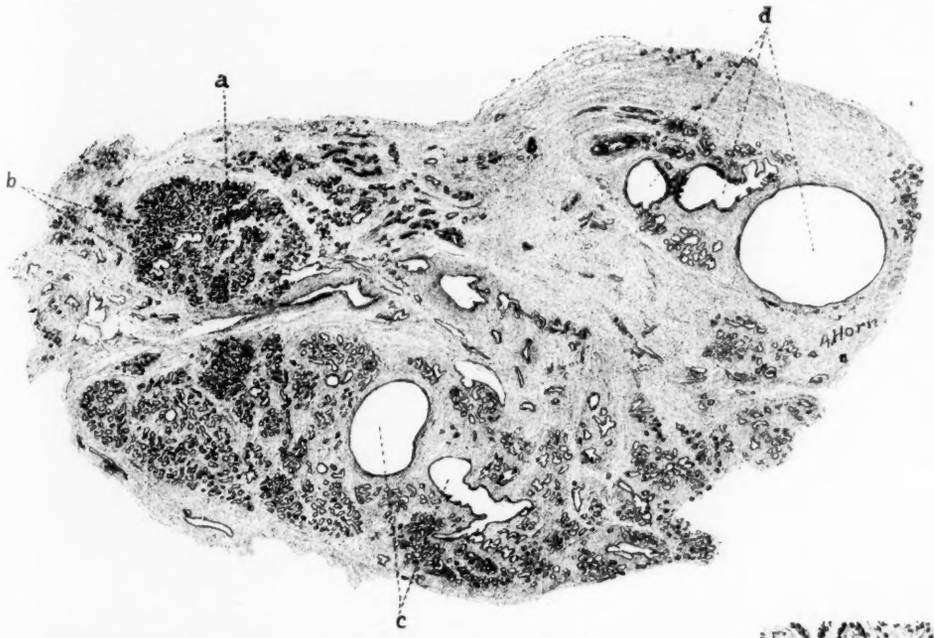

Fig. 3.—A section through the entire Bartholin gland (9 diameters). *a* gives us a clear idea of a lobule composed of many small glands and partially separated by stroma from the neighboring gland elements. At *b* are sections of this lobule's terminal duct. At *c* and *d* are sections of larger ducts.

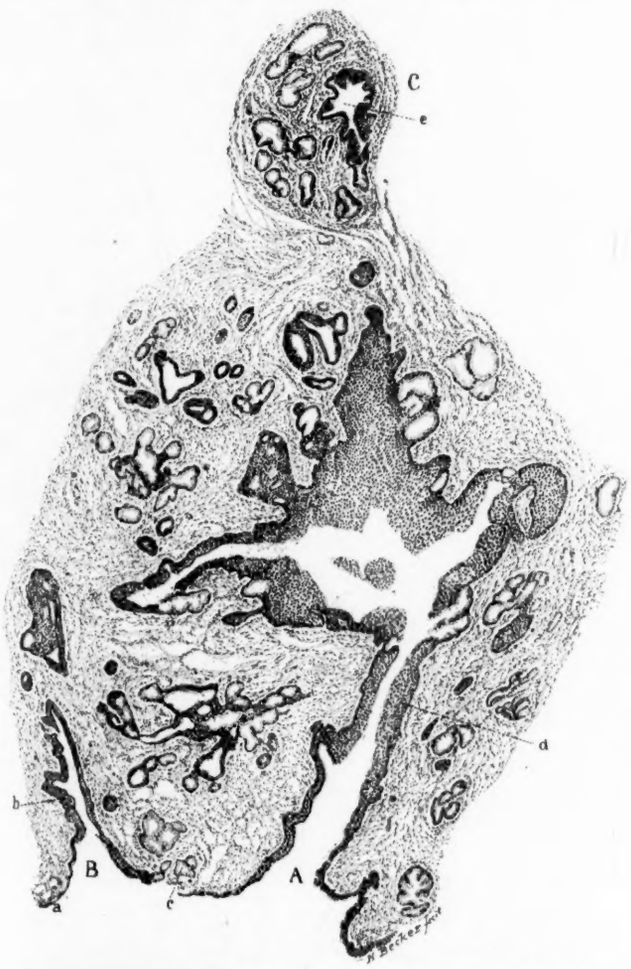

Fig. 4.—Sections through the main duct of Bartholin's gland. In the center is a somewhat distorted main duct lined by many layers of squamous epithelium. Opening directly into it are several glands, A and B are secondary ducts. The secondary duct at *d* is lined by squamous epithelium; at *b* by transitional epithelium. At *c* a few small glands open into the duct. C is an isolated lobule of Bartholin's gland composed of its many small glands and its terminal duct *e*. (33 diameters.)

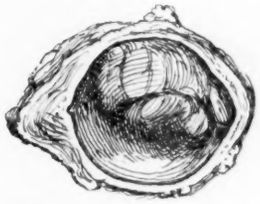

Fig. 7.—A small cyst of Bartholin's gland. (1½ diameters.) The inner surface is smooth over a considerable area, but in the upper portion of the drawing are large, sickle-shaped openings of secondary ducts.

Fig. 5.—Terminal ducts in Bartholin's glands. *a* is a secondary duct dividing into four terminal ducts. These are lined by cuboidal epithelium. At several points the small glands are seen opening into these terminal ducts. The appearance of many layers of cells at *b* is due to the obliquity of the section. The major number of the glands are tubular. The gland epithelium is high cylindrical with the nuclei at the base.

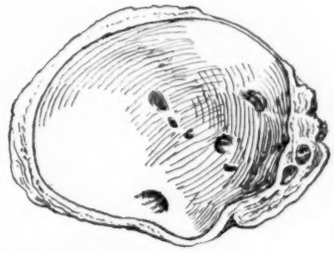

Fig. 8.—Cyst of Bartholin's gland. (1½ diameters.) The inner surface is smooth, but opening into the cavity are several sickle-shaped openings—secondary ducts. To the right is the substance of the gland and in it are two small cyst spaces.

Fig. 6.—A section of Bartholin's gland, showing the lining of a secondary and a terminal duct. (90 diameters.) *a* represents a secondary duct which at *b* is lined by transitional epithelium, the surface layer being cylindrical. Opening into the duct at *c* is a small gland. At *d* the duct epithelium is but one layer in thickness. The duct divides into the terminals *e* and *f*, the epithelium of the gland *g* shows well the goblet-shaped cells, indicating that they are filled with secretion.

Fig. 9.—Cyst of Bartholin's gland. (Natural size.) The cyst is egg-shaped, has a smooth inner surface and at numerous points shows dilated sickle-shaped or round openings of the secondary ducts. To the left is the substance of the gland.

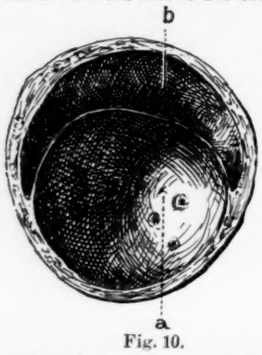

Fig. 10.

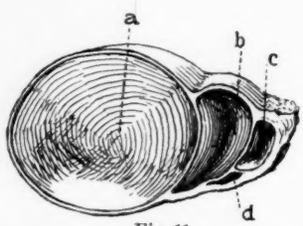

Fig. 11.

Fig. 10.—Double cyst of Bartholin's gland. (Natural size.) *a* appears to be a dilated duct as in its walls are the openings of several secondary ducts. *b* seems to be a cystic secondary duct.

Fig. 11.—Multiple cysts of Bartholin's gland. *a* is probably the cystic main duct. *b*, *c*, and *d*, dilatations of secondary ducts.

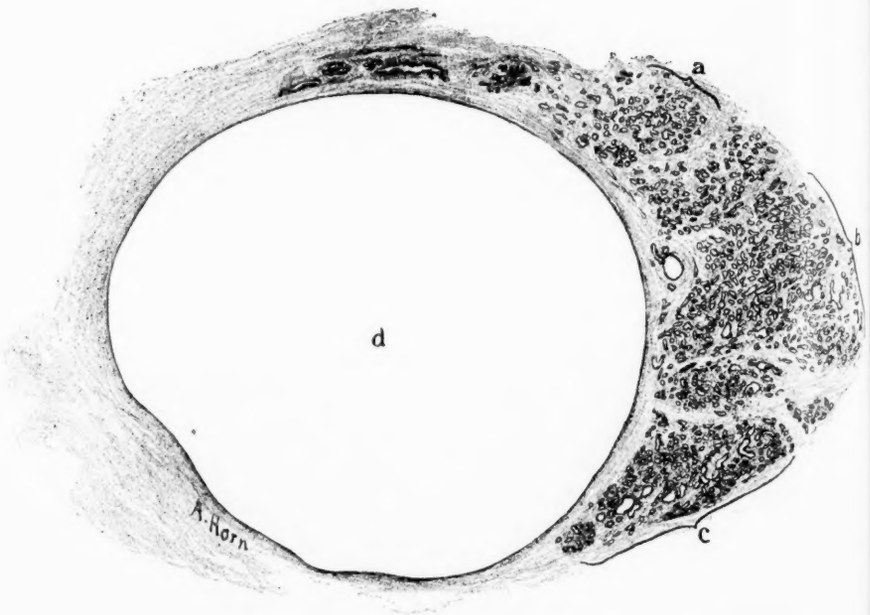

Fig. 12.—Cyst of the duct of Bartholin's gland. (6 diameters.) *d* is the cystic and almost spherical duct. The gland substance has been pushed to one side. The lobular arrangement of the gland is well shown by the three distinct lobules *a*, *b* and *c*.

CYST.

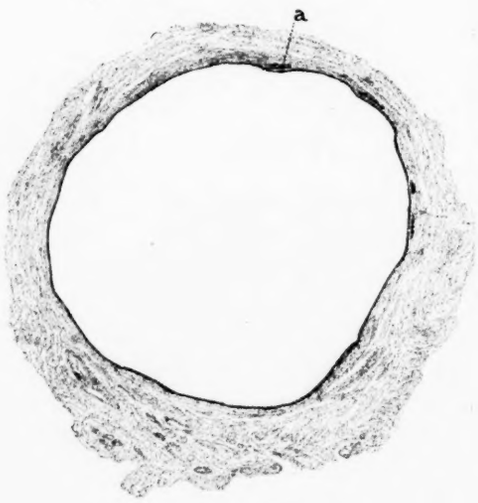

Fig. 13.

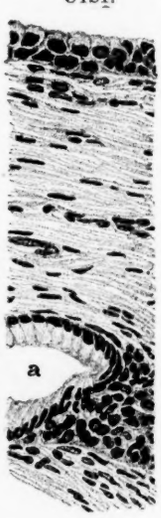

Fig. 14.

Fig. 13.—Small cyst of Bartholin's gland, with gland elements in the wall. (4 diameters.) This cyst originated from the duct and we have a few small gland elements in the wall, as seen at *a*. For the epithelial lining of the cyst see Figure 14.

Fig. 14.—Lining of cyst developed from Bartholin's duct. (400 diameters.) For the low power see Figure 13. The cyst is lined by two layers of transitional epithelium. *a* is a typical gland and closely resembles those of the cervix.

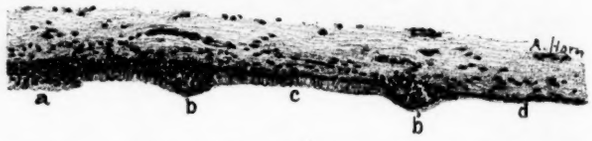

Fig. 15.—Wall of cyst developing from occlusion of a secondary duct and unfolding of the glands. (120 diameters.) At *a* we have transitional epithelium; at *b* and *b'*, transitional epithelium at the mouth of the gland *c*, which is unfolded and now forms part of the cyst wall. The epithelium at *d* also indicates the unfolding of a gland. Here there is considerable flattening of the cells making them cuboidal.

has examined many cases, found them opening in the lateral vaginal wall about 1 cm. above the fourchette. In health the gland may occasionally be recognized as a small pea-sized body which can be rolled between the fingers, when one is introduced into the vagina, while the other palpates the outer vaginal wall. Occasionally the opening of the duct may be detected and a small probe introduced. If there be a vaginitis, the inflammatory process is prone to pass along the duct and involve the gland. Then, on gentle pressure, a drop of pus can be squeezed from the duct, as shown in Figure 1. In Figure 2 we have the relation of the gland to the vagina clearly outlined. The gland has, however been pushed away to the side by the cyst developing in the duct. The glands in this particular case are rather larger than usual.

Under normal conditions the gland secretes a small amount of whitish, slightly tenacious fluid, closely resembling the white of an egg. The gland function is complete at the fifth or sixth month, according to Müller. The gland diminishes in size from the ninth to the twelfth year, rapidly increases again between the sixteenth and eighteenth year, and in old age undergoes atrophy.

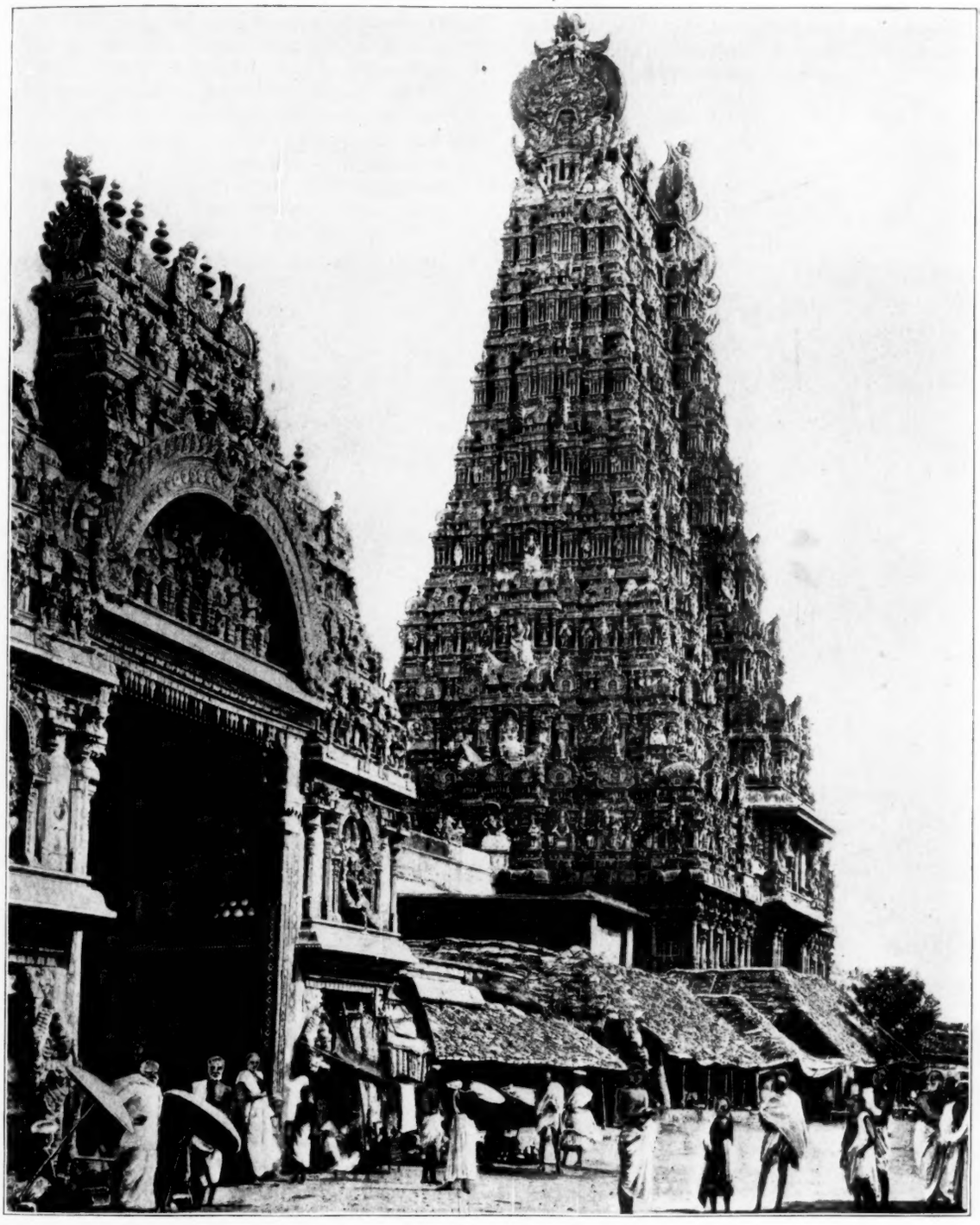

Fig. 1.—An illustration of Hindu architecture. (Illustrating the article by Dr. Senn, page 240.)

HISTOLOGIC APPEARANCES.

On carefully dissecting out the gland and examining it with very low power it is found that the duct after leaving the vagina gradually increases in diameter in the vicinity of the gland. It then divides into secondary ducts, and these in turn divide, forming terminal ducts which drain the secretion from the lobules. The entire gland may be likened to a bunch of grapes, developed more on the one side than on the other. The main duct corresponds to the stem; the secondary and terminal ducts to the branches; and the lobules represent the individual grapes. Figure 3 demonstrates very well the gland as seen on section; *c* and *d* are cross or oblique sections of the secondary ducts and *a* is a well-defined lobule.

The duct near the vagina is lined with many layers of squamous epithelium, as seen in the central portion of Figure 4. As we pass toward the gland, the duct lining is composed of transitional epithelium, still many layers in thickness. In the deeper layers the cells are squamous in type, but in the superficial layer—the one directly in contact with the lumen of the duct—they are of the high cylindrical type. The secondary ducts are likewise lined by transitional epithelium (Fig. 6 at *b*). But the number of layers is usually much less, as seen in Figure 6 between *c* and *d*, and in Figure 4 at *A* and *B*. The terminal ducts may be lined by transitional epithelium, but I have usually found them covered by but a single layer of epithelium. Sometimes the cells are high cylindrical in type, as seen in Figure 6 at *e*. At other times cuboidal, as represented in the four terminal ducts depicted in Figure 5 at *a*. The glands forming the lobules are tubular or slightly racemose, are round or oval on cross section and are lined by one layer of high cylindrical epithelium (Figs. 4, 5 and 6). The cells, if filled with mucus, may be goblet-shaped (Fig. 14). The cell nuclei are small, round or somewhat flattened, stain deeply and are situated at the base of the cell. They bear a very striking resemblance to the cylindrical epithelium of the cervix. Their protoplasm does not, however, take the hematoxylin stain, as is so often noted in cervical epithelium. While these small glands which make up the bulk of Bartholin's gland are for the most part confined to the lobules, isolated glands are found here and there opening directly into the main duct or into the secondary ducts, as shown in Figure 4 at *c* and in Figure 6 at *c*.

The elements of Bartholin's gland are held together by a definite connective-tissue framework rich in blood vessels and in non-striped muscle fibers. This tissue is, according to Müller, amply supplied with nerves.

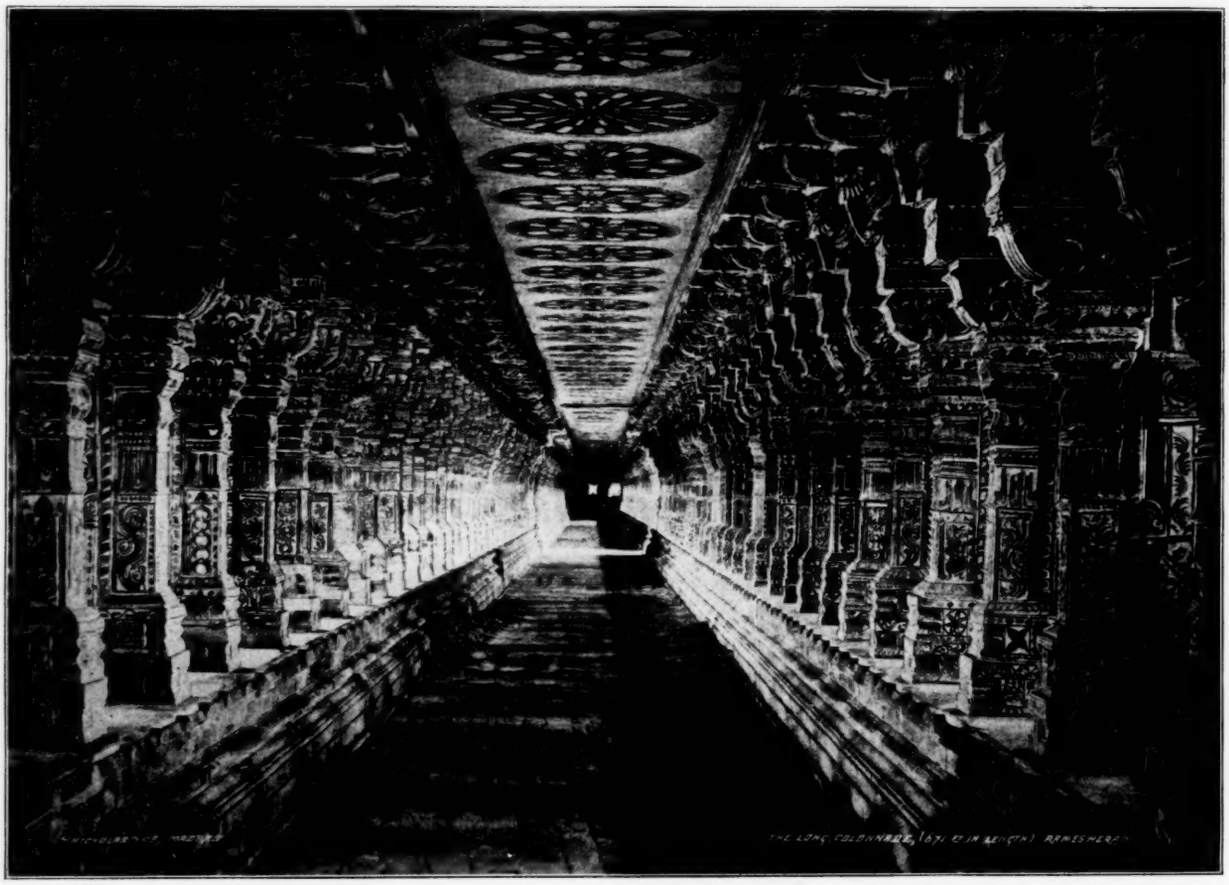

Fig. 2.—The colonnade, 671 feet in length, in the Hindu temple at Rameshwaram. (Illustrating the article by Dr. Senn, page 240.)

CYSTS OF BARTHOLIN'S GLAND.

From the observations of Müller we learn that the duct of Bartholin's gland at its exit is about .5 mm. in diameter and that in the neighborhood of the gland it may be fully 2 mm. in caliber. It is readily seen that any irritation producing a vaginitis might cause the two sides of this small duct to become glued together, entirely preventing the escape of the gland contents. This frequently happens, especially if there is a gonorrheal infection. If the inflammation be of a virulent characacter, an abscess of the gland is likely to follow, but if the infection be a mild one there is simply a reten-

tion of the secretion and a cyst develops. In some cases the secondary ducts are blocked, while the main duct remains patent. We then usually have multiple cysts in the substance of the gland.

CYSTS DUE TO OCCLUSION OF THE MAIN DUCT OF BARTHOLIN'S GLAND.

These cysts are superficial (Fig. 2) and vary from 1 to 4 or 5 cm. in diameter; they are tense and rather thin-walled at their most prominent points (Figs, 8, 9 and 11). The body of the gland is pushed outward into the surrounding adipose tissue, as shown in Figure 2.

The cysts may contain a clear and limpid fluid, which is often viscid, but when hemorrhage has taken place from the cyst wall is yellowish or chocolate-colored.

The inner surface of the cyst is smooth, but here and there small round or sickle-shaped openings are seen in the wall. These are the points at which the secondary and terminal ducts open into the main duct. They have naturally become somewhat dilated, owing to the damming back of the section which can not escape. Sometimes the large secondary ducts become completely disconnected from the main duct, and they in turn give rise to secondary cysts, as seen in Figures 10 and 11.

The character of the cyst lining will, of course, depend on the situation of the point of occlusion. If this is near the vagina the cyst wall will be lined by a varying number of layers of squamous epithelium, while that portion of the cyst originating from the duct near the body of the gland will show a lining of transitional epithelium. At numerous points over the inner cyst surface the lining will consist of only a single layer of cells, of the high cylindrical or cuboidal variety. This is due to the unfolding of the small glands that here and there open along the course of the duct.

CYSTS DEVELOPING FROM OCCLUSION OF THE SECONDARY DUCTS OR THE TERMINAL DUCTS.

These are naturally much less common. They are multiple and very small. Their contents are similar to those of the larger cysts. Their lining is at certain points composed of transitional epithelium and at other points of one layer of cylindrical cells (Fig. 15).

CLINICAL HISTORY OF BARTHOLIN'S CYSTS.

The patient usually gives a more or less definite history of an old inflammation of the vagina which, after an interval of weeks or months, is followed by the development of a swelling low down in one or both vaginal walls. As a rule, this swelling is not very painful, but if bilateral, is frequently associated with discomfort on locomotion. Not infrequently a patient will enter a hospital for a peritoneal operation and a small cyst which has never given the slightest trouble is detected.

TREATMENT.

If the cyst occasions no inconvenience and is not increasing in size it may be left alone. If any operative interference be deemed necessary, it is well to dissect out the entire gland, taking care not to injure the large plexus of veins closely hugging the outer side of the cyst.

DETAILED REPORT OF CASES OF CYSTS OF BARTHOLIN'S GLANDS.

The following is a report of the cysts of Bartholin's glands coming under my observation at the Johns Hopkins Hospital during the ten years, 1893 to 1903. It is, however, no index of the number that exists, as the majority of the patients with this condition are treated in the dispensary and do not come to operation. It will be noted that the youngest patient was 17, the eldest 50. Bartholin's cysts are naturally most common during the child-bearing period. It will also be seen from the cases here tabulated that the smallest cyst was 5 mm. in diameter, the largest 4 cm.

CASE 1 (Gyn. Path., 214).—Age 25. Cyst 1.5 cm. in diameter. The cyst wall was composed of fibrous tissue. The cyst was lined by one layer of high cylindrical pale staining epithelium with the nuclei at the base of the cells.

CASE 2. (Gyn. Path., 490).—Age 43. Cyst 2.5 cm. in diameter. The walls were very thin and were composed of fibrous tissue; three definite cyst cavities were found. The glands were somewhat dilated, and the cyst lining was composed of one layer of high cylindrical or cuboidal epithelium.

CASE 3 (Gyn. Path., 2951).—Age 38. Cyst 2.5 cm. in diameter. The cyst wall was of non-striped muscle and fibrous tissue. Typical Bartholin glands were found in the cyst wall, also sections of secondary ducts. The cyst lining was of columnar or cuboidal epithelium. Where it was two layers in thickness the deeper layer was cuboidal, the other cylindrical. This cyst was evidently due to dilatation of the duct, with secondary unfolding of the glands.

CASE 4 (Gyn. Path., 2971).—Age 44. Cyst 5 mm. in diameter. The walls were composed of fibrous tissue. The cyst lining varied in different places, one layer being of cylindrical epithelium, several layers with the superficial cells cylindrical; several layers of squamous epithelium dipping into the stroma, or one layer of cylindrical epithelium.

CASE 5 (Gyn. Path., 3133).—Age 50. The cyst wall was composed of fibrous tissue and had glands scattered throughout it. The cyst lining varied; in places there was one layer of epithelium; at other points two layers, with a superficial layer of cylindrical cells; here and there the epithelium was many layers thick.

CASE 6 (Gyn. Path., 335).—Age 35. The cyst was 3x3x2 cm., and very thin walled, translucent; on the inner surface there were several smaller semilunar depressions, evidently where other small cysts had opened into the larger one. The cyst wall was of fibrous tissue, with glands in the wall, and the cyst lining consisted of one or two layers of epithelium, the superficial layer of which was composed of cuboidal cells.

CASE 7 (Gyn. Path., 3527).—Cyst 1.5 cm. in diameter; the walls were 1 mm. thick, transparent; there were small round or semilunar openings on the inner surface, indicating remnants of smaller cysts which had opened into the larger one—dilated secondary ducts. The cyst wall was of fibrous tissue, with some non-striped muscle; the greater part of the gland structure was forced to one side—one gland .5 mm. in diameter, one secondary duct 1 mm. The cyst lining was made up of from 2 to 8 layers of transitional epithelium; superficial layer cuboidal. The cyst had evidently developed in the duct.

CASE 8 (Gyn. Path., 3594).—Size 2.5 cm. The cyst wall was of fibrous tissue; at one end was a large amount of normal gland tissue; some glands were dilated to 3 or 4 times the natural size. A few secondary dilated ducts were seen. The cyst lining consisted of from 2 to 10 layers of epithelium; the superficial layer of which was cylindrical. This was evidently a cyst of the duct.

CASE 9 (Gyn. Path., 3910).—Age 26. Cyst 4 cm. in diameter; the walls thin and translucent, the inner surface smooth, with here and there round or sickle-shaped spaces indicating openings of dilated secondary ducts. The cyst wall was composed of fibrous tissue. The cyst lining consisted of one layer of cuboidal or almost flat cells; at places there were 10 or more layers of swollen, pale staining polyhedral cells. This patient had tubercular peritonitis.

CASE 10 (Gyn. Path., 4345).—Age 35. Cyst 1 cm. in diameter. The cyst wall was of fibrous tissue and the cyst lining of from 2 to 10 layers of transitional epithelium; the superficial layer being cylindrical and apparently ciliated.

CASE 11 (Gyn. Path., No. 4444).—Cyst 2x1.5 cm., transparent. The cyst wall was of fibrous tissue, containing gland structure, mostly normal, a few glands from three to four times the natural size, with flattened epithelium. The cyst

lining was of from two to eight layers of transitional epithelium, the superficial layer being cylindrical. This was a cyst of the duct.

CASE 12 (Gyn. Path., 4535).—Age 35. Cyst 4.5x3x3 cm., egg shaped, thin walled, transparent, and showing on the inner surface several small, shallow, sickle-like openings of the dilated secondary ducts. The cyst wall was of fibrous tissue; the gland elements were mostly normal, a few dilated. The cyst lining, in some places, consisted of one layer of high, pale staining cells, side by side, transitional epithelium from 2 to 6 r more layers thick. Unfolding of ducts and glands.

CASE 13 (Gyn. Path., 4643).—Age 23. Size 7 mm. The cyst was situated in the left labium and was very hard.

CASE 14 (Gyn. Path., 5019).—Age 39. Cyst 3 cm. in diameter. The cyst wall was of fibrous tissue, and the cyst lining was composed of one layer of cylindrical epithelium.

CASE 15 (Gyn. Path., 5174).—Age 34. Cyst small. The cyst wall was of fibrous tissue, and the cyst lining was made up of one layer of columnar epithelium, with the nuclei at the base of the cells.

CASE 16 (Gyn. Path., 5250).—Age 17. The cyst wall was of fibrous tissue and the cyst lining was composed of several layers of transitional epithelium; at some points there was one layer only.

CASE 17 (Gyn. Path., 5509).—Age 25. Cysts very small, multiple. The cyst wall was mostly of gland tissue; there were a few cysts varying from a pin point to 2 mm. in diameter. The cysts were mostly dilated secondary ducts, lined in part by transitional epithelium, and in part by one layer of cylindrical epithelium.

SOME NEW VIEWS RESPECTING THE HOROPTER.*

GEORGE T. STEVENS, PH.D., M.D.

NEW YORK.

No question in physiologic optics has been more attractive to investigators in that department of research than that of the horopter, yet, although the ablest thinkers have devoted themselves to it with great earnestness, the subject has remained an unsolved enigma. That the doctrines and theories which have been advanced have not solved the problem, no one who has studied it can doubt. The most notable of all these doctrines, that of the great master Helmholtz, is as unsatisfying, if not more unintelligible, than the others. So far as his marvellous array of abstruse mathematical formulæ served to indicate even a single horopter it was an impossible one both in form and position.

If we inquire into the cause of the failure to solve this interesting and, as I believe, this most important problem, we shall find that it is due to a misunderstanding of the two fundamental principles on which any doctrine of horopters must be formed.

These two principles are: 1. The doctrine of corresponding points. 2. The doctrine of the directions of the meridians of the retinas.

The first of these principles has been stated incorrectly by all investigators alike, while the second has been incorrectly affirmed by Helmholtz, and those who have accepted his conclusions drawn simply from his own peculiarities.

We have, then, first of all to examine these two fundamental principles.

The doctrine of corresponding points as stated by Helmholtz, who expresses the generally accepted view, is as follows:

1. "On apparent vertical concordant lines, points which are at the same distance from the vertical horizon are concordant."

2. "Points, which in the retinal horizons are at equal distances from a point of fixation, are corresponding points."

Le Conte expresses the law by saying that if a pair of dividers is opened until they are the exact distance apart of the central spots (maculæ) and, while being held level, touch many points, all these points are corresponding points.

Helmholtz proceeds to show that the corresponding points in the two visual fields are also at the same height and separated by the same angle. He illustrates his proposition by stereoscopic and other diagrams which are drawn on a flat surface.

It requires but a moment of consideration to discover that there is here a marked inconsistency.

If points equally distant in the plane of the visual field, as represented by these flat surfaces, are corresponding, as Helmholtz asserts and proves, then it is impossible that points equally distant in the retinal fields should also be correspondent.

Every proof that Helmholtz brings to sustain his interpretation of the law of corresponding points is positive evidence of the incorrectness of his view and the view which has been universally accepted.

If then, the accepted view is incorrect, what is the correct statement of the law? Accepting the law that points in the plane of the visual field, which are at equal distances and separated by equal angles are corresponding points in the visual field, it is at once apparent that the retinal corresponding points must be variable in distance depending on their relative distances from the points of fixation, the muculæ.

I have elsewhere defined corresponding points of the retinas as "those points in the retinas which answer to proportional degrees of rotations of the eyes about the centers of rotation." They represent, therefore, the relation between the muscular and the retinal senses.

The belief that for retinal spatial locations equal distances in space must be impressed on equally distant points of the retina is an entirely false conception of the functions of that organ.

That some recent observations have appeared to show that estimation of space may be, within very limited extents, made without corresponding movements of the eyes, does not invalidate the proposition that the corresponding points of the retinas represent the relation between the muscular and retinal senses. We shall presently see that another element enters into the ideas of space which emphasizes the psychologic side of the question to the modification of the purely mechanical side.

The second fundamental principle in the question of the horopter is the position of the meridians of the retina relative to the cranium.

Helmholtz, examining by a method not fully reliable, found that, as he believed, the vertical meridians of the retinas leaned outward, while the horizontal meridians remained exactly horizontal. This does not permit of a discussion of this proposition or the reason for these apparent peculiarities. I have elsewhere shown the probable reason for this error. It is sufficient to say that the conditions of adjustment of the great philosopher's eyes, which he has incidentally revealed, confirm the belief that his meridians leaned out, but there is no reason to suppose that his observations on his own horizontal meridians were correct. There is every reason to believe that they were erroneous.

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* Read in the Section on Ophthalmology of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

The leaning out of his vertical meridians did not, as he assumed, represent the typical adjustment of eyes; they were, in fact, rather exaggerated instances of an anomalous state.

The clinoscope has cleared this subject of all mystery and shows that there are various anomalies of the positions of the vertical—and, therefore, of all—meridians just as there are various anomalies of refraction. But the typical position for the vertical meridians is precisely vertical.

Now, assuming the law of corresponding points as I have stated it, and assuming the verticality of the vertical meridians, the necessity for all the involved and almost endless mathematical formulæ of Helmholtz in determining a horopter is eliminated and these intricate

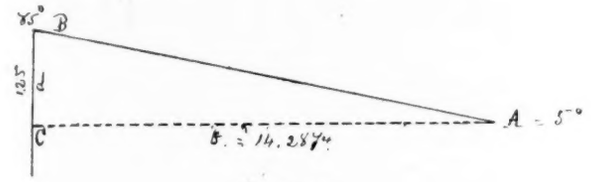


Fig. 1.

formulæ may be replaced by simple problems of plane trigonometry.

The horopters of former investigators have been based on a doctrine of corresponding points of equal measurements on the surface of the retina. The horopter, according to the present reasoning, is based on corresponding angular displacements which vary in the two eyes in

$A = 1° 35'$

$\frac{a}{b} = \text{Tan } A$

$\text{Tan } A = .02764$

$b = 5°$

$a = 5 \times .02764$

$= 0°.1382$

Fig. 2.

proportion as a given object in the visual field is removed to one side of the point of fixation.

With the data at our command derived from these two basal principles, we may then compute a horopter when the eyes are directed straight forward to a point at infinite distance, the head being in the primary position, but for other positions further data are demanded. In convergence, and with depression of the plane of vision, the phenomena arising from the laws of torsions must enter into our computations.

For example, if the two eyes are in convergence and the plane of regard is depressed the horizontal meridians of each eye will tilt downward toward the temporal side, and the upper end of the vertical meridians will tilt out while the lower ends will tilt in. These tiltings in typically adjusted eyes are accurately proportioned to the lateral and ascensional displacements of the eyes. Here permit me to diverge from my topic long enough to allude to the absurd custom of some writers who confound the two absolutely different and independent conditions, torsions and declinations, the first physiologic rotations, the other anomalous adjustments.

Employing all these data we are then in position to determine the general positions of a horopter for different adjustments.

In the case we have already supposed, with the eyes directed to the horizon and at infinite distance, the

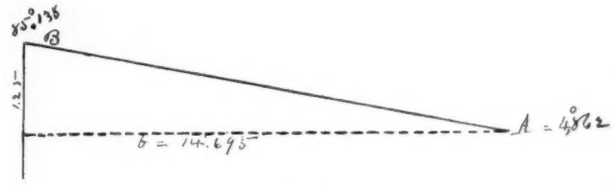


Fig. 3.

horopter will be formed in relation with the distant point of fixation and will be a plane surface at a right angle to the plane of regard. If we were to accept only a purely mechanical interpretation of visual phenomena, in this case all objects nearer than the point of fixation would be excluded from the horopter. As a matter of fact there is a subjective horopter, formed on the basis of such unconscious conclusions as enter into the experiment of Dove, where distinctly heteronymous images are seen not only single but correctly located as to distance.

The subjective horopter is of the utmost importance, and is governed by fixed laws. The physical horopter, including the points in space actually impressed at corresponding points of the two retinas may be regarded as the skeleton, while the subjective horopter, including points in space which are impressed at such points on the retinas as correspond to a demand for certain exact movements of the eyes necessary in order to place the image at the macula of each eye constitute a mental assemblage of the lineaments of harmonic visual impressions. In a rude way we may compare this subjective horopter to the overtones of a musical sound. The fun-

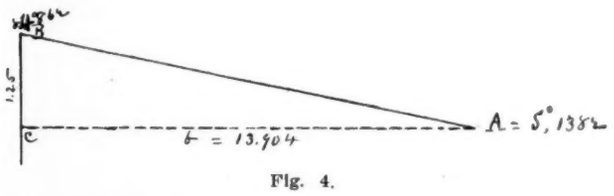


Fig. 4.

damental tone by itself is not pleasing; it is noise. It is the skeleton of the tone. But when combined with its multiplicity of overtones, tones which even the ear of the expert musician fails to differentiate, the musical tone finds its body and affords pleasure to the listener.

In the subjective horopter the consciousness of the required movements takes the place of the actual movement as it does in the Dove experiment.

This doctrine of a subjective horopter does not by any means provide for a confused jumble of space perceptions either in the retinas or in the mind. Every object in the subjective horopter is as much subject to the

laws of the angular valuation of muscular movements as are the objects in the physical horopter. Keep in mind the principle that while the image of a given point in space may fall on physically non-corresponding points of the retinas, a subliminal consciousness determines the relative positions of these two non-corresponding points to the maculæ of the two eyes and concludes on the movements which would be demanded to make an actual adjustment for the maculæ were such movements to be executed, and it is this unconscious conclusion, based on accurate data, that places the object, singly, in its appropriate position in the field of view and at the proper distance relative to other objects in that field.

In our horopter, objects less distant than the point of fixation may still be within this subjective horopter, their images being impressed on the two retinas at corresponding points for the lines of incidence on one or other side of the maculæ. Then they will appear, as in the spark in the Dove experiment, as single. The principles controlling the psychic phenomena in that experiment are, in this case, modified to meet the different conditions. Thus, a great number of objects within a fairly wide range may be brought within a perfect horopter.

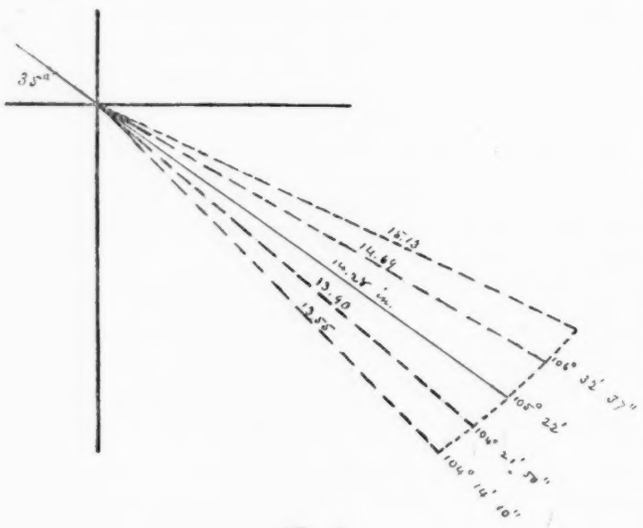


Fig. 5.

If the direction of the gaze is changed while the head remains in the primary position a new horopter must be and is formed.

Let the gaze be directed downward and to a point a few feet distant. The torsional element is so slight that the former calculations will very nearly give the position of the horopter. Should, however, the gaze be fixed on an object, as for example, the page of a book held in the ordinary position of reading, say, with the point of fixation in the median plane, the plane of regard depressed 35 degrees, and with the lateral deviation of the visual lines (the convergence) for each eye 5 degrees, while the distance between the nodal points is assumed to be 2½ inches, the problem becomes more complicated. We may determine, from these data, the distance of the horopter and, taking the torsions into consideration, the position of that horopter relative to the plane of regard.

The distance of the point of fixation from the base connecting the two nodal points is determined by the formula, b/a=Cot A, in which A=5° (the lateral angle), a=1.25 (½ the base line) and b the distance required (Fig. 1).

This distance is found to be 14.2875 inches, and at this distance the image of the point of fixation is exactly at the macula of each eye.

Images of points in the horizontal line passing through the point of fixation on the page require special consideration here, and there enters at once an apparent difficulty, for the horizontal meridians of the two retinas are no longer horizontal by the law of torsions. If we consult Helmholtz's table of torsions we find that the horizontal (and vertical) meridians have, by a convergence of 5° in each eye and a depression of the gaze of 35°, been tilted, the horizontal with the outer part down and the inner part up to the extent of 1°35′.

Is it possible now for the images of points of a horizontal line on the page to be impressed at the horizontal meridians of the two retinas, seeing that the former is exactly horizontal and the latter are tilted?

It is not only possible, but in fact exactly because of this tilting of the retinal meridians, that the images of points in the horizontal line of the visual field will be impressed precisely at the horizontal meridians of the retinas.

Without giving space to the mathematical demonstration of this statement, we pass to inquire in what position will lie a horopteric line running up the page and through the point of fixation.

Let us select a point of 5° above and another 5° below the point of fixation for the determination of the direction of this ascending line.

It has been shown that the point of fixation is distant from the base line 14.2875 inches. Will the distances to the points 5° above and 5° below be the same? Evidently not, for, in order that the image of the upper point on the page shall be impressed at the vertical meridians, the angle of incidence must be less, since owing to the tilting of the vertical meridians they are less widely separated below the maculæ (where the upper image is impressed) than at the maculæ; and because the vertical meridians separate above the maculæ the angle of incidence from the lower point will be greater.

Taking these facts with the given data, we find first the actual extent of the spreading at a point 5° above the macula. This is determined by the formula, a/b=Tan A, in which A=1°35′, b=5° and *a* is the distance through which the point B has been moved to C (Fig. 2) by the act of torsion.

The extent of change of position outward of this point then is, by the formula, 0°,1382. Hence, in determining the distance of the upper selected point we must subtract from the lateral angle of 5° the extent of the removal of the point B, or 0°,1382. Also for determination of the distance of the lower selected point, we must add, 0°,1382 to the 5° (Fig. 3). Then by the first formula, b/a=Cot A, in which A=4°,862, or 5°,1382, we obtain the distances 14.695 inches for the upper selected point, and 13.904 inches for the lower. Connecting these through the point of fixation we have a line representing the horopteric line running up the page of the book which will form an angle above the line from the fixation point of 105, which represents also the angle at which the book should be held in order to form a perfect horopter under the conditions given and with typically adjusted eyes (Fig. 4).

If these calculations are carried further, it is found that in the space of 10° up and down the page there is a very slight curve, as is shown by the diagram (Fig 5).

Experimental research has fully confirmed the results of these calculations.

The principles which have been shown in these calculations may be applied to any other line in the field of what may be called the objective horopter, while the innate conception of the comparative relations of objects not in this objective horopter serves for the formation of the subjective horopter.

A horopter will be formed in relation to every point of fixation and with as strong, if not with a much stronger, impulse than that of accommodation. Difficulties will be overcome when possible, at the expense of much effort and the habitual failure to make such adjustments of the eyes as to form a fairly complete horopter is attended by unpleasant and even serious results.

The horopter then, is not the over-refinement of scientific curiosity. It is a practical, even momentous subject worthy of the most earnest consideration.

In what has been said it has been assumed that the adjustments of the eyes are typical. Unfortunately such adjustments are not only not universal, but anomalous conditions of adjustments are of great frequency.

Such anomalies may serve as slight hindrances in the formation of a horopter or they may absolutely prevent it. In either case, the instinct to conquer the difficulty is present and efforts are made to overcome the obstacles.

In order to illustrate this proposition let us take our supposed case of one reading with a convergence of the eyes of 5° each, with a depression of the plane of regard of 35°. If there is perfect adjustment of the eyes the horopter is formed as we have shown.

Suppose, however, that the person thus engaged with the book has an adjustment of the eyes of 10° of arc higher than the typical adjustment; such cases are not rare, they are, on the contrary, very common. Consider what must occur. This person must depress the plane of regard, not 35°, but 45°. But with a convergence of 5° each eye, and a depression of 45° the torsion is no longer 1°35′, but much more, therefore no horopter will be formed if the head of this reader remains in the same position as that of the person at first supposed. Two contingencies present themselves, the field of view may remain confused or the reader may advance the head 10°. This he prefers to do, and by this means a compromise is made by which a fairly good horopter is obtained. The same person advances the head also in walking or in conversation.

But suppose again that this person has the eyes adjusted too low by 10°; in such a case no horopter can be formed at the proper position. It can be done by throwing the head backward. We see these people with their chins in the air everywhere.

Again, the reader may have anomalous declinations, and here an obstacle to the formation of the horopter is interposed and the anomalous adjustments just referred to may be and often are complicated with anomalous declinations.

Are these and other maladjustments simple inconveniences? They are, on the contrary, conditions of great moment.

Let us recall the person with the eyes adjusted too high and who throws the head forward in order to form a horopter. It is in this class that we find the consumptive. It is no accidental coincidence. The consumptive is, in almost all instances, a person who has by the malposition of the air passages induced by the automatic efforts to form the horopter, restricted the circulation of air in the upper bronchi and has thereby offered a hospitable welcome to the bacillus of consumption. I speak from experience when I say that if before the ravages of the parasite have become too extensive the pose of the head is favorably modified by a change in the ocular adjustments the introduction of full currents of fresh air into the upper part of the lungs will banish the intruder and save the victim.

So, too, we might point to the numerous ills induced by the opposite malposition of the head, but I need not dwell on this. It is proper to add, however, that certain forms of declination will induce these undesirable head positions as well as the high or low adjustments of the eyes.

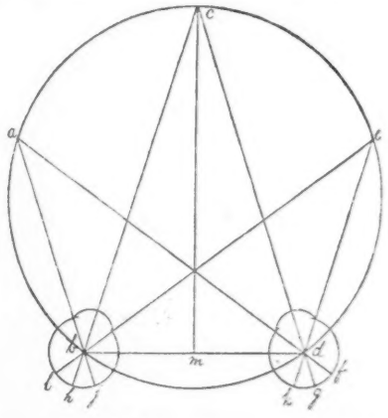
These are conditions to which I have more than once referred, but it will not be too often till greater importance is attached to the statements.

A word about strain. The results of these atypical conditions are not so much, as nearly all writers about them seem to think, due to strain. For example, it is not the strain on the inferior recti in the case of [illegible] too high adjustment. It is the confusion from the excess of torsion which induces a perplexing effort of all the muscles of the eyes as well as a modification of the pose of the head. It would serve the cause of correct thinking if the phrase "eye strain" were completely eliminated from our vocabularies.

I have endeavored to condense into an exceedingly brief space one of the most important subjects with which our ophthalmologist can occupy his attention. If the setting forth has been incomplete I trust that I may at least have created interest in the subject.

DISCUSSION.

DR. G. C. SAVAGE, Nashville, Tenn.—I will be able to prove, by means of this illustration, that corresponding retinal points are points similarly related to the two maculas, not by linear measurement but in degrees of arc. All are agreed that with rare exceptions the macula of one eye corresponds with the macula of the other eye. I had thought that we all likewise agreed that Helmholtz was right when he taught that all other corresponding retinal points bear a similar relationship to the maculas. If Helmholtz had correctly constructed his horopter he would have had at hand a mathematical proof of the correctness of his statement. The true horopter, the isogonal circle, or the monoscopter, is constructed through the point of fixation and through the centers of rotation of the two eyes. These three points, as shown in the illustration, are *c*, *b* and *d*, and the circle itself is *c-a-b-d-e*. Every point on this circle



capable of throwing light into the two eyes, will be seen singly by the two eyes, for the images will fall on retinal points that correspond. In the illustration the visual axes *h-c* and *g-c* and the indirect visual lines *j-a*, *f-a*, *l-e* and *k-e* all lie in the plane of the circle *a-b-d-e-c*. It is evident that this plane prolonged backward would include the horizontal retinal meridian of each eye. The arc *l-j* is a part of the one horizontal retinal meridian and the arc *k-f* is a part of the other horizontal retinal meridian. The macula in one eye is at *h* and in the other eye is at *g*. The macula *h* corresponds with macula *g*,

for the visual axis *h-b-c* intersects the visual axis *g-d-c* at *c*, therefore point *c* is one point for the two eyes. Point *l* in the one eye corresponds with point *k* in the other eye, for the visual line *l-b-e* intersects the visual line *k-d-e* at *e*, therefore point *e* is one for the two eyes. Since *l* and *k* are corresponding retinal points it only remains for me to prove that *l* bears the same relationship to *h* that *k* does to *g*. The inscribed angle *c-b-e* is equal to the inscribed angle *c-d-e*, for each is measured by half the arc *c-e*. The angle *l-b-h* is equal to the angle *c-b-e*, for they are opposite angles; and the angle *k-d-g* is equal to the angle *c-d-e*, for they are opposite angles. Therefore, the angle *l-b-h* is equal to the angle *k-d-g*. The angle *l-b-h* is at the center of retinal curvature and is measured by the arc *l-h*, and the angle *k-d-g* is at the center of the retinal curve and is measured by the arc *k-g*. The arc *l-h* must be equal to the arc *k-g*, therefore *l* is related to *h* as *k* is related to *g*. The same truth is shown as to retinal points *j* in the one eye and *f* in the other eye. And this would be true however much the radius of curvature of the one eye might differ from the radius of curvature of the other eye. The similarity of location of corresponding retinal points is in degrees of arc and not in millimeters. What has been proved of *l* and *k* and of *j* and *f* as corresponding retinal points, could be proved of all corresponding retinal points lying in the horizontal retinal meridians. Using the same figure, the proof can be applied to points lying in the vertical meridians. With the two eyes fixed, rotate the plane of the circle on the chord *b-d* as an axis, and thus generate a surface of binocular single vision. As the rotation is effected what were the visual axes (*h-b-c* and *g-d-c*) become indirect visual lines, the retinal ends of which are made to move in the vertical retinal meridians. Elevating this plane in front 5 degrees depresses it behind 5 degrees; elevating it in front 10 degrees depresses it behind 10 degrees, and so on for any extent of rotation. The retinal end of the visual line *h-b-c* and the retinal end of the visual line *g-d-c* are made to describe arcs of equal degree. What is true of corresponding retinal points in the two horizontal and the two vertical retinal meridians must be true of corresponding retinal points in any two oblique retinal meridians that are similarly related to the vertical and horizontal meridians. Therefore, I conclude that Helmholtz taught the truth concerning corresponding retinal points. Correct as to corresponding retinal points, Helmholtz was in error concerning the normal relationship of the vertical retinal meridians to each other. He should have known that, in accordance with the supreme law of corresponding retinal points, the vertical axes of the eyes, which lie in the planes of the vertical retinal meridians, must be kept parallel with each other, except in cases of non-symmetrical oblique astigmatism. Except for the oblique muscles, the vertical axes of the eyes would not always be correctly related. The law relating to the oblique muscles is that they shall compel the vertical axes of the eyes to remain parallel with the median plane of the head, regardless of the position of the point of fixation in space.

DR. GEORGE T. STEVENS—I think that every one who has been a student of physiologic optics recognizes the diagram which has just been thrown on the screen by Dr. Savage as the familiar diagram of Müller. It has figured in text-books for many years. As a practical horopter it was and is an impossibility. It is hardly worth while to discuss the merits of Müller's horopter, which was rejected by experts long ago. Nor has Helmholtz' horopter been any more satisfactory. Dr. Savage has told us that there is no torsion in the changing relations of the eyes except such as results from defects. If this were true, if there are no physiologic torsions, we must abandon the law of Listing. That law has stood for many years and is likely to remain for still many more years. According to that law, in the example which I have chosen, with a depression of 35 degrees and a lateral angle of 5 degrees each eye, there must be torsion of 3 degrees or there will not be single vision. We shall never abolish Listing's law nor shall we find the eyes unchanged in their meridianal relations by their various adjustments. Dr. Savage tells us that he some time since pointed out that the doctrine of Helmholtz relating to the meridians was incorrect. That was not difficult, since I had demonstrated the fact clearly, but it had not been demonstrated until the clinoscope was introduced, when immediately the error was clearly shown.

DENGUE IN THE ISTHMIAN CANAL ZONE.

INCLUDING A REPORT ON THE LABORATORY FINDINGS.*

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Surgeon U. S. Navy.
AND
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Of the several tropical diseases whose etiology is yet in question, dengue undoubtedly stands at the head of the list in importance. It has long been considered an infectious disease, as the writings of Ornstein,[1] Eulenberg,[2] Graham[3] and Hirsch[4] attest, while we find Leichenstein,[5] Malie,[6] von Duringe[7] and a half dozen others presenting almost indisputable evidence that it is contagious, in the technical sense of the word, as well.

TABLE 1.—Differential leucocytic count in dengue, showing changes in various stages of the disease.

Stage of Disease.	Poly-nuclears.	Large Mono-nuclears.	Trans-itionals.	Small Mono-nuclears.	Eosino-philes.	Mast Cells.
On admission	32.2	7.9	36.6	23.	0	.3
First drop	41.	5.4	6.7	46.8	0	0
Quiescent period	40.6	6.3	5.8	47.	.3	0
Second rise	50.8	7.6	5.2	33.6	4.	0
Second drop	52.5	5.9	5.4	25.1	11.	0
Convalescence	50.	5.3	4.2	30.3	9.7	0

McLaughlin[8] of Texas, in an exhaustive series of studies begun as far back as 1885, undoubtedly establishes the clearest claim to the discovery of the causative agent, but in spite of his clear and concise description of the method of procedure employed, very few investigators have been able to verify the presence in dengue blood of the micrococcus which he found in such large numbers.

Our lack of exact knowledge concerning the morbid anatomy of this infection is principally due to the extremely low mortality, the death rate being 1 per cent. (Hare) or less.

TABLE 2.—Differential leucocytic count in dengue, showing changes in various stages of the disease.

Stage of Disease.	Poly-nuclears.	Large Mono-nuclears.	Trans-itionals.	Small Mono-nuclears.	Eosino-philes.	Mast Cells.
On admission	52.4	3.8	7.1	36.3	.4	0
First drop	54.	3.9	6.4	34.3	.3	.1
Second rise	69.4	6.9	5.6	17.8	0	.3
Second drop	52.1	6.9	2.4	38.2	.3	0
Convalescence	33.1	6.3	9.3	45.9	3.	0

Consequently we are forced to depend, in a great measure, on examinations of the blood and excreta for information concerning the pathologic changes which are occurring.

During the past spring and summer, while stationed on the Isthmus of Panama, it was our good fortune to be brought into intimate contact with some 200 cases of the disease, and, although no startling discoveries were made, the laboratory findings may serve to direct some future investigator toward the true cause.

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* A preliminary report appeared in THE JOURNAL, Dec. 17, 1904, p. 1869.

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6. Diction. Encyclop. des Sciences Medicale.
7. Monatschrift für praktische Dermatologie, 1890.
8. New Orleans Med. and Surg. Jour., 1885, n. s., xiii; THE JOURNAL A. M. A., 1886, vi; Boston Med. and Surg. Jour., 1886, cxiv; Texas Med. News, 1895-6.

The results from only typical cases are given; in those instances where there was an abortive second rise or if there was the slightest doubt concerning the possible presence of malarial organisms, as evidenced by periodicity, the microscope or the effect of quinin, the record was not used. The selections could be carefully made as all laboratory data for every patient admitted to the hospitals at both Bos Obispo (after the identity of the disease became fully established) and Empirado was systematically placed on file from the time of admission until convalescence was well established.

In spite of the fact that repeated searches were made oration. The use of unstained blood in searching for the plasmodium of malaria is not to be compared in value to the results obtained when reliably stained mounts are employed.

The non-pigmented, piroplasma-like bodies (?) seen by Graham were frequently found in many of the unstained specimens. Inasmuch as they were also present in blood from a large number of cases of epidemic catarrh examined while on board the U. S. S. *Illinois* at Newport News, some two years ago, it is probable that they are not foreign bodies, but that they are simply the result of necrobiotic changes within the red cell.

TABLE 3.—Showing urinary findings at various stages of dengue.

Case.	Stage of Disease.	Color.	Specific Gravity.	Albumin.	Reaction.	Phosphates.	Chlorids.	Sulphates.	Urea.
1.	First drop	Light amber	1.032	no	acid	23.	13.	1.	1.404
	Second drop	Amber	1.015	no	acid+	10.	3.3	.5	1.026
2.	First drop	Amber	1.030	no	acid	20.	9.	1.	1.566
	Second drop	Dark straw	1.032	no	acid	16.	3.	1.	1.62
3.	First rise	Dark amber	1.030	no	acid	18.	9.	3.	1.728
	Convalescence	Straw	1.014	no	acid	6.	5.	1.	1.08
4.	First rise	Light straw	1.020	no	acid	10.	13.	1.	1.392
	Second rise	Amber	1.010	no	acid	8.	5.	.5	.977
5.	First drop	Amber	1.022	no	acid	12.	8.	.5	2.052
	Second drop	Amber	1.018	no	acid	10.	5.	1.	.648
6.	First rise	Light amber	1.020	no	acid	10.	6.	.5	4.32
	Second rise	Amber	1.032	no	acid	20.	10.	1.	1.638
7.	First drop	Reddish	1.026	no	acid	10.	4.	2.	1.756
	Convalescence	Reddish	1.020	no	acid+	11.	5.	.5	2.511
8.	First drop	Amber	1.030	no	acid	20.	5.	1.	2.862
	Second rise	Dark straw	1.022	no	acid	10.	5.	1.	2.322
9.	First drop	Dark amber	1.036	no	acid	5.	5.8	.2	1.646
	Second rise	Dark amber	1.026	no	acid	20.	15.	1.	3.074
10.	First drop	Dark straw	1.028	no	acid	15.	10.	1.5	2.886
	Quiescent stage	Amber	1.022	no	acid+	17.	7.	1.5	2.74

TABLE 4.—Showing number of red and white corpuscles, with hemoglobin percentage and differential leucocyte count at various stages of dengue.

Case.	Stage of Disease.	Red.	White.	Hb.	Polynuclears.	Large Mononucleears.	Transitionals.	Small Mononucleears.	Eosinophiles.	Mast Cells.
1.	First rise—top	5,385,520	3,132	100+	31.2	7.9	37.	23.3	0	0
	Second rise—top	4,425,000	3,156	100	29.4	6.3	7.	51.8	3.1	0.3
2.	First rise—top	5,040,000	5,422	100	73.5	1.3	9.4	17.1	3.2	0
	Convalescent	4,604,000	5,154	95	30.5	6.6	12.	40.	12.	0
3.	First rise—top	4,056,000	4,433	100	83.5	2.1	1.2	7.1	.7	0
	Second rise—top	5,040,000	1,866	100+	41.5	2.9	7.9	24.7	22.9	0
4.	First rise—top	4,395,510	6,422	100	73.8	6.4	2.2	16.7	.8	0
	Second rise	5,320,000	8,310	100+	34.4	1.9	9.	52.3	2.4	0
5.	First rise	3,875,000	2,488	100	50.7	7.4	5.1	36.8	0	0
	Second rise—top	5,904,000	4,022	100	34.9	8.8	3.3	7.2	7.2	0
6.	First rise	4,557,776	3,444	95	50.	5.2	6.9	36.3	1.6	0
	Second drop—beginning	5,266,900	7,778	100	30.9	10.2	9.2	45.3	4.4	0
7.	End first drop	5,172,228	4,800	100+	39.7	9.5	5.	44.9	.9	0
	End second drop	5,734,000	4,320	100	26.5	9.1	6.5	57.4	.5	0
8.	First rise—top	5,776,000	3,688	100	44.8	5.3	6.9	40.9	1.9	0
	Second rise	5,104,000	4,266	100+	30.	5.6	6.9	52.8	3.8	.9
9.	First rise—top	5,532,000	4,111	100	65.3	6.1	8.	19.5	.5	.3
	Second rise—top	5,040,000	3,622	100+	51.9	6.6	5.	33.5	4.	0
10.	First rise—top	4,152,000	4,344	95	69.4	6.9	5.6	17.8	0.	.3
	Convalescent	4,504,000	3,977	100	38.1	6.3	9.3	43.9	3.3	0
11.	First rise—top	4,942,216	3,622	100	62.5	4.2	8.8	24.3	.2	0
	Second rise	5,320,000	5,510	95	38.7	5.2	9.2	44.2	2.7	0
12.	First drop	4,640,000	4,210	100	40.	5.	8.8	45.7	.4	0
	Second drop	5,693,332	3,866	100+	40.3	3.6	8.9	47.	.2	0
13.	First drop	5,306,664	5,311	100+	42.3	4.2	6.9	46.5	0.	0
	Convalescent	5,404,400	7,310	100	23.2	7.2	6.2	51.4	12.	0
14.	First rise—top	5,040,500	3,576	95	61.3	2.4	9.2	25.8	.6	0
	Convalescent	5,404,000	5,866	100	49.9	4.4	5.2	31.1	9.4	0
15.	First rise	4,351,610	3,110	100	58.5	5.5	7.8	37.9	.3	0
	Convalescent	4,408,888	4,288	95	30.	5.2	6.8	53.	5.	0
16.	First drop	5,440,000	3,954	100	56.4	4.7	7.	31.	.9	0
	Second drop	4,524,440	3,266	100	53.6	5.8	4.5	24.	12.	0

for micro-organisms in the blood, such as those described by McLaughlin, various stains and methods (Wright, eosin and methylene blue, Ehrlich's tri-acid and Romanowsky-Nocht) being employed, at no time was their presence demonstrated.

Occasionally the somewhat striking refractive changes incident to "stippling" (Schuffner) are somewhat puzzling, but it is hardly possible that this condition could have been mistaken for minute organisms by previous observers.

Our first blood examinations were all made from fresh specimens, encircled by vaselin rings to prevent evap- A stained specimen from the same subject, no matter how careful the technic employed, invariably failed to show anything.

But little was learned regarding the mode of conveyance of the infection owing to the comparative rarity of the anopheles we were compelled to make use of various species of the culex:[9] *C. consobrinus* (Desv.) *C. stimulans* (Walk.), *C. tarsalis* (Coq.), and *C. taeniorhynchus*, the *Conchyliastes posticus* (Wied.) and the *Stegomyia fasciata*.

Young but well-grown insects of the above genera

9. Howard's classification of species is used.

were taken from the breeding jars and allowed to feed on dengue patients. Each group was then confined in a separate cage for periods of time varying from five to fourteen days, then taken out and carefully dissected on a glass slide.

The stomachs and salivary glands were then examined, both directly and after being treated with a solution of sodium chlorid and various simple stains. No bacteria, piroplasma or zygote forms were found.

The inoculation experiments were unsatisfactory and open to criticism, for the volunteer subjects were not only exposed to the bites of other mosquitoes at any time, but they were also brought into almost daily contact with dengue cases.

CASE 1.—Bitten by *Culex tarsalis* and *Culex consobrinus* that had been allowed to feed on a 4-day dengue patient 10 days previously. No fever appeared in 14 days.

CASE 2.—The experiment was repeated with similar virgin insects that had fed on first, second, third and fifth day patients and that had then been allowed to remain in isolation for from 8 to 14 days. The man bitten by the fifth-day mosquito was taken down with typical dengue 6 days later.

CASE 3.—Bitten by a similarly infected stegomyia which had been isolated 14 days previously. Patient, fourth day. An attack of dengue followed, but not until two full weeks had elapsed.

CASE 4.—The same procedure was carried out with a young *Culex stimulans* which had been infected 11 days prior to the experiment from a 3-day case. No infection resulted.

Other sources of a possible origin for the epidemic were investigated. Scheube[10] and Clayton[11] have fully covered the essential meteorologic factors in a few brief phrases: high temperature, moisture, low levels, lack of air space, dirt and overcrowding.

So many cases had catarrhal symptoms of the respiratory tract (bronchitis, pharyngitis, tonsillitis and coryza) that it seemed to be more than a coincidence and strongly suggested the epidemic fevers of overcrowding so frequently seen on shipboard.

The striking resemblance to influenza is also seen in the leucopenia and the selective action of the toxin on the nervous system. Many who did not complain of pain or soreness in the throat had marked congestion, with white patches, or even ulcerated areas, of the pharyngeal mucous membrane, and the peculiar putrefactive odor observed in cases of epidemic catarrh was characteristic of these cases also.

Swabs from eleven throats were examined simply by rolling on a slide and, after fixing, staining with Loeffler's solution of methylene blue, to determine the predominating bacteria present. More than the usual number of leptothrices and streptothrices were seen and many groups of tiny diplococci, free or in epithelial cells.

In preparations from the pus in a case of tropical bubo, occurring as a sequel to dengue, the small diplococci were again found in large numbers, and were seemingly the only organisms present. The increase of small, mononuclear lymphocytes points to an invasion of the lymphatic apparatus.

Unfortunately, our outfit for making bacteriologic cultures was incomplete, and no efforts at either isolation or cultivation were possible.

It would be extremely interesting to carry through a series of cultures, especially on blood serum and blood-streaked agar, from the blood, enlarged glands and throats of typical uncomplicated cases.

10. Diseases of Warm Countries.
11. Encyclopædia Medica.

The appended table of urine examinations shows decided increase in phosphates. They often appeared as a heavy cloud in freshly voided specimens. No experiments were made at the time to see if clear urine would have resulted from the previous internal administration of acids. The amount of urine passed in twenty-four hours was decreased. Albumin was hardly more than a trace when present. Two cases in which it appeared were atypical ones in the early part of the epidemic.

The estimation of phosphates, sulphates and chlorids was made by the use of the centrifuge. The urea was measured by the modified Davy's method and is open to criticism, as the low percentages of the first group were probably due to lime employed not being so good as that obtained later.

The urine in 122 cases of dengue gave albumin in six instances, about 4.9 per cent. In 41 cases of malaria it was found five times, or 12.2 per cent.

Our conclusions are as follows:

1. Dengue is one of the few fevers in which a leucopenia persists from the first.

2. Blood examinations are of great value in differentiating between malaria and dengue. Even though no parasites be found, a slight leucocytosis with decided increase in the percentage of large mononuclears and transitionals is indicative of the former, while a leucopenia, with a normal differential leucocytic count or varying degrees of a small mononuclear lymphocytosis and a marked eosinophilia late in the disease, is characteristic of the latter.

3. Albuminuria is seldom seen in an ordinary attack of dengue, and then only in small amounts. The exact opposite is true of yellow fever.

4. The period of convalescence in dengue is almost invariably ushered in by a pronounced small mononuclear lymphocytosis which persists for several days.

5. It is suggested that the causative agent is a small diplococcus or a delicate bipolar staining bacillus closely resembling Pfeiffer's organism. It is probably transmitted by the respiratory tract, and its virulence is much increased by the presence of the essential meteorologic factors and by overcrowding.

Clinical Report.

BILATERAL FACIAL PARALYSIS,

WITH SENSORY AND REFLEX DEFECTS, POSSIBLY DUE TO LA GRIPPE.*

F. W. LANGDON, M.D.
CINCINNATI, OHIO.

This case was referred to me by Dr. J. C. Oliver of Cincinnati, with request for examination and opinion.

Patient.—The subject of the conditions here reported was a teacher, 51 years of age, married, and the father of three healthy children, aged, respectively, 20, 18, 11.

I saw him at the Presbyterian Hospital, Cincinnati, in March, 1904. He was about 5 feet 10 inches in height, well developed, fairly nourished, of dark complexion and hair. Not evidently anemic. Family and personal history good.

Present Illness.—His chief complaint was of headache, which was located in the occipital and both mastoid regions; it was dull in character and had persisted since its onset, five weeks before. He also complained of inability to close either eye, which was evident.

The onset of his trouble he attributed to an attack of al-

* Read in the Section on Nervous and Mental Diseases of the American Medical Association, at the Fifty-fifth Annual Session, June, 1904.

leged la grippe, five weeks previous, manifested by sneezing, chilliness and malaise. He kept at his work, however, for two weeks, then took to his bed for about two weeks. There was no facial or other paralysis up to this time. He then went on a journey of 50 miles by rail, and the next day noted that he could not close his right eye. Three days later there was inability to close his left eye.

Examination.—Three days after this he came under my observation and presented the following conditions: Patient in bed. Complete paralysis of both facials, upper and lower divisions, inability to close either eyelid. The eyeballs rolled up and outward when he attempted to close the lids. He could not wrinkle forehead, frown or smile. The lower lip drooped and could not be approximated to the upper, giving to the face an idiotic expression strangely at variance with the intelligence of the patient as manifested in his conversation. He could protrude his tongue well and move it in all directions but could not roll it up to form a longitudinal gutter; an interesting confirmation of the supposition that the tongue is supplied in part by the facial as well as largely by the hypoglossal.

His speech was blurred, owing to the defective lip movements, with some difficulty in swallowing, especially liquids.

As regards the other cranial nerves: The ocular movements and pupillary reactions were good. The masseters and temporals acted well. The mouth felt to him unduly dry.

Hearing was defective, watch tick heard at one inch. (This, he states, is an old defect.) He hears voices well. He could open his mouth forcibly against resistance. There was some tenderness on pressure in front of both mastoid processes.

Motor power in the trunk and extremities was good. Grasp, right, 105; left, 90 (normal). No evident muscular tremor or wasting. Sensation to touch, pain and temperature impressions were good.

Reflexes: The knee-jerk, March 7, was absolutely absent on both sides, even to re-enforcement. Plantar reflexes present and active, flexor in type. Visceral reflexes were normal. Vasomotor and trophic: There was free sweating of both legs from the knees down, without obvious cause.

Subsequent History.—Three days later, March 10, he came for further examination. He walked well but felt weak.

Pulse 72, of fair quality and volume. Heart clear. Grasp, right, 100; left, 95. Legs still sweating excessively.

Face still paralyzed, both sides, upper and lower divisions.

Taste absent on right side to salt, sweet and bitter. Present on left side, but dulled and uncertain. The knee-jerks had returned and were equal, but considerably reduced.

Four days later, March 14, he walked to my office, nine blocks; said he felt a little confused in his head, but did not indicate it in thought or action. Pulse 72, fair tension.

He could raise the right eyebrow slightly and draw the right angle of mouth slightly upwards. He could not close the eyes completely. Could not taste sweet on right or left sides of tongue. Calls bitter "sour" and salt "sour" on right side. Speech was better and food and liquids were managed with little difficulty.

Treatment.—The first electrical tests were made at this time. To faradism all facial muscles responded, very sluggishly. To galvanism, less sluggishly, but not quickly. Kathodal contraction was greater than the anodal contraction.

The knee-jerks were present, equal, and stronger than four days before, but not fully normal. At this period the patient decided that his interests demanded his return home.

Addendum.—A letter from the patient, dated August 12, 1904, states: "My recovery has been nearly complete, though when very tired can notice my eyes are not fully natural. I took full charge of my business May 1, and have had no interruptions from ill-health."

DISCUSSION.

DR. T. H. WEISENBURG, Philadelphia, emphasized the fact that bilateral facial palsy is rare. He recently saw three such cases in Dr. Spiller's service, in the Polyclinic Hospital. An interesting report of the etiology was made by Sarbo of a case of facial diplegia, where the patient's father, mother and brother had the same disease. Sarbo inclined to the view that in these cases there was a congenital narrowing of the fallopian canal, this acting as a predisposing cause, because of the interference with the blood supply of the facial nerve; the exciting cause was probably an infection, as "taking cold."

DR. HUGH T. PATRICK, Chicago, mentioned the case of a child he saw some months ago with complete double facial paralysis. The electric examination did not show the typical reaction of degeneration, so he was inclined to think it was a tumor, but the subsequent course of the case led him to believe that it could not be a tumor, because the child has not grown worse, being, if anything, a little better. Although he thinks syphilis could be excluded from the case, he put the child on antisyphilitic treatment with no beneficial result. He has come to the belief that the case is probably a very peculiar one of myasthenia gravis. The eye muscles are not involved and the muscles of the extremities are not involved to any great extent. There is simply general weakness, lassitude, ready fatigue and this bilateral facial paralysis. He knows of no other explanation that is adequate, and he does not think that this one is quite adequate.

DR. F. E. COULTER, Omaha, Neb., recently had a unilateral case, of similar origin, occurring in a physician. The knee-jerks became absent, and there was a great deal of sweating. Both plantar reflexes were flexor in type and there was a very marked toxic state with the paralysis that accompanied the infection. When this physician had la grippe he became exhausted, with soreness and aching all over the body. He attempted, as physicians will, to do his work, and one day's driving was quite sufficient to bring on this undesirable result, Bell's paralysis. We can not yet explain why certain nerve trunks are picked out as the seat of infection by certain micro-organisms and others apparently exactly similar in structure, so far as we know, go untouched, but this is certainly the case.

DR. ALBERT E. STERNE, Indianapolis, said that he regretted that Dr. Langdon failed to test the Achilles tap in reference to the patellar reflexes; it would be interesting to know if there was any disturbance of that reflex. Dr. Sterne mentioned two cases; one of them has been referred to in a written article but the other has not been published. The first was the case of a man who had been thrown from a wagon twenty years previously in Portland, Oregon, landing on the back of the head a little to the left side. At that time he was said, erroneously, to have sustained no fracture. However, he lost the hearing in the left ear and became paralyzed on the left half of the face and left external rectus; there was loss of sensation on the right half of the body completely. Twenty years afterward, under systematic, careful treatment, this man recovered to a great degree the use of the facial muscles on the left side; his hearing remained lost and sensations on the right half of the body became almost normal twenty years after the occurrence of the lesion. The other case was unique, and Dr. Sterne has never seen anything of the kind published. A man from Seattle, Washington, had gone to Saratoga to attend a postal convention and was on his way to visit a town in Indiana, when he became stricken with symptoms exactly similar to those we see in poliomyelitis. The question arises whether in this case it was poliomyelitis, or whether it was a peripheral lesion. The man was completely and absolutely paralyzed in every portion of the body; both arms, both legs and both halves of the face completely paralyzed, and all the symptoms seemed to be those of poliomyelitis. Later there was wasting of the muscles, which were absolutely paralyzed, and reaction of degeneration, which still exists in a large part of the trunk muscles and both halves of the face, but he can use his arms somewhat, very much as in cases of regeneration following poliomyelitis. Dr. Sterne has been in doubt as to whether he should make the diagnosis of involvement of the anterior horn. Whether it was due to such involvement or to a peripheral lesion, it was the most widespread paralysis he has ever seen, either in private practice or in the hospital.

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PUBLIC CARE OF THE INSANE PENDING COMMITMENT.

Some months ago, in one of the largest cities of the country, a young foreigner became suddenly insane at his boarding-house. He was hurriedly sent to the nearest police station in a patrol wagon, locked up as a prisoner for a day or so, growing constantly more maniacal, then sent in the patrol wagon again to another police station, where the city physician would find it more convenient to examine him. By the time he arrived at the second station he was in a state of intense maniacal excitement. After a struggle with half a dozen policemen, he was finally overpowered and thrust into a restraint chair, where he died within half an hour, without ever having been seen by a physician.

At about the same time in the same city a foreigner, equally obscure, became insane and shot at his roommate. He was taken at once to a police station in a patrol wagon, kept there for two days, then taken to another station more convenient for the city physician to visit, where he was kept another day, and finally was seen by the physician, who then ordered him sent to the detention hospital.

These incidents—illustrating the unmedical treatment which insane suspects frequently undergo—coming to our attention suggested an inquiry into the methods of various cities as regards public care of the insane pending commitment. Accordingly, we addressed inquiries to the mayors of a dozen leading cities as to the method by which insanity is determined in each—whether by jury trial or by medical examination, whether patients are arrested, how and where they are detained pending commitment, if patients are conveyed to the asylum by the sheriff, whether women attendants are required for women patients, and whether nurses are sent from the asylum to convey patients thither.

Accurate answers to these few questions would pretty fairly indicate the degree to which medical authority controls in a community; for we do not hesitate to say that the trial of insane patients by jury, the arrest of patients, their transportation in patrol wagons, their detention in police courts or jails, their conveyance to the asylum by the sheriff or by the police, the failure to furnish nurses from the asylum to escort patients, all indicate archaic conditions and show that in any city where they exist the intelligent physicians have been unable to influence public affairs as they should. The answers received show all grades of treatment. In one city, our letter was handed to a member of the detective force for reply. His answer would lead one to infer that our inquiry referred to the criminal class. He states that "insane suspects are arrested, detained in the Emergency Hospital, and are held there for observation; then they are tried by a board of physicians appointed by the Superior Court to try the case, and in the event of a verdict of guilty they are committed to an insane asylum. There are women attendants appointed by the sheriff who have the custody of the female patients. The sheriff has charge of all insane cases."

It will be seen that the writer entirely ignores the first step in the commitment process, namely, the manner in which patients reach the emergency hospital. In like manner, from the very city where the incidents occurred which are mentioned at the beginning of this article, we are cheerfully assured that patients are detained in an emergency hospital awaiting inquiry as to insanity. Various cities do not undertake to dodge the question, but frankly state that "suspects" are taken to the jail or police station at first.

In cities where there are detention or emergency hospitals the general public may suppose that patients are immediately taken there. As a matter of fact, patients in these cities also are taken first to the police station or to the jail by policemen, in patrol wagons, in precisely the same manner as a common drunk. In the majority of the replies, the expressions used are those associated with the treatment of criminals—patients are "arrested," held in police stations or jails, "tried" by jury or judge or even by a board of examiners, sent to the asylum in charge of the sheriff or his deputies. All this is so commonplace that it probably does not arouse in any of us the quick sense of shame which it should. Does it shock us that in one city the coroner determines the mental state of the patients, or that in another the probate judge performs the function of the alienist?

It is superfluous to point out again the long-since recognized impropriety of entrusting the diagnosis of a disease to a jury of laymen. Slowly but surely this anachronism will disappear, though it still survives in some of our greatest centers, notably in Chicago. Our purpose is to call attention to the fact that during the first few days, so critical in cases of acute mental disorder, the treatment of the patient is distinctly nonmedical and is precisely that accorded to a felon. The public and the profession at large consider the patient as magically transferred to the asylum, which we now call a hospital, without at all realizing the terrifying experiences often undergone in the comparatively brief period between removal from home and arrival at the hospital. Consider the effect on a delicate, refined woman in the early stage of melancholia, suddenly thrust for a night into a jail or the cell of a police station. Such an experience would infallibly exacerbate the malady, and might even make all the

difference between a favorable and unfavorable outcome.

In the small cities and in the country communities the treatment of patients is even more primitive than in the large towns. A patient is often brought many miles in an open wagon to the county seat, and placed in the county jail for varying periods before an examination is held. Jailers or sheriffs with the best will in the world are of course unfitted to give the care which insane patients need. We were lately told by a member of a state board of charities of a visit to a jail where many insane were received. The sheriff felt much aggrieved because he had been threatened with suit by the relatives of a patient who had been placed in the jail in a state of great excitement, and who had seriously injured his hands by beating against the bars of his cell door. When the sheriff's attention was called to good leather muff and wristers hanging in the office, whose use would have prevented the whole trouble, he said contemptuously: "O! them things; they've been there since before I came, but I've never touched 'em."

It is a relief to turn to instances of excellent management in some of the cities from which we have replies. Three cities seem to have nothing of the police method in their manner of dealing with the insane. These are New York, St. Louis and Baltimore. In the city of New York patients may be detained for examination as to their mental condition in but one place, the pavilion at Bellevue Hospital. Three examiners in lunacy are employed by the city of New York. They are physicians, holding their positions under the civil-service law. These examiners are stationed at Bellevue Hospital, and the patients are under their care pending commitment. Following an order for commitment, the state hospital authorities are notified, and they send trained nurses to accompany patients from the pavilion to the institution. Women patients are always accompanied by women nurses.

In Baltimore the procedure is very simple. The hospitals being in the suburbs of the city, the process of commitment need occupy but a few hours. Two physicians visit the patient in his home, and on their recommendation the board of charities makes out the commitment papers and notifies the hospital to send its ambulance, and, if necessary, a female attendant to convey the patient to the institution.

St Louis uses the observation ward at the City Hospital for the detention of patients previous to examination. On the certificate of two physicians, patients may be committed to the asylum. They are conveyed in a city ambulance, and attendants are sent from the hospital to accompany them. Doubtless there are other towns where the treatment of the insane has been divorced from the care of criminals. At any rate, the instances we have cited are cheering. We commend to county and district medical and state societies an inquiry into the actual conditions surrounding the care of the insane pending commitment in their respective communities.

THE PATHOLOGY OF ICTERUS.

In a condition like icterus, which is a symptom of many different diseases, there is always a desire to find a common factor underlying all cases. In the early days of pathology it was assumed that in all instances this common underlying factor was a mechanical obstruction of some sort, but it very soon became evident that in many cases no such mechanical obstruction could be found. In such cases the signs of biliary stasis in the liver itself, dilatation and overfilling of the bile ducts, stasis of bile in the interlobular bile passages and deposition of bile pigment in the liver cells, are entirely lacking. Inability to account for such cases on mechanical grounds led to the conception of hematogenous as opposed to hepatogenous icterus. It was thought that bile could be manufactured not only in the liver, but also in the blood. The latter form of bile formation was thought to occur in toxic and infectious conditions in which a large number of blood corpuscles were broken up in the circulation. As a result of this conception all cases of icterus which could not be classed as obstructive were ranged under hematogenous icterus, or as Naunyn and Minkowski called it, icterus from polycholia. Later it was shown that something more than excessive blood destruction was needed to account for such cases when the liver was acting normally, and in recent years many have held that the second necessary factor was a disturbance in the function of the liver cells themselves. This change in the liver cells has been compared to the disturbance in the kidney cells which produces albuminuria. This hypothesis explained especially well the icterus of infections or intoxications, and that of circulatory or nervous disturbances, because in just such conditions it was easy to imagine that the secretory powers of the liver cells might be affected. Some writers went so far at this time as to almost deny to mechanical factors any importance at all.

The recent work of Eppinger, which was based on painstaking histologic examinations and a method which rendered the walls of the bile capillaries easily visible, has led back once more to a mechanical theory of icterus. He found in various forms of icterus a dilatation of the bile capillaries with elongation, sinuosity, varicose swellings and even rupture of the walls. As a result, the bile was able to gain entrance into the perivascular lymph spaces. The obstruction, though mechanical, was not in the larger bile passages, but in the capillaries, which were either compressed by new-formed connective tissue or blocked by bile thrombi. These observations have been confirmed in the main by Abramow and Samoilowicz. Recently Winckelmann,[1] working at

1. Zeitschrift für klin. Medicin, vol. lv.

Minkowski's suggestion, has gone over the work afresh. The point in which Eppinger's conception differs most radically from the preceding theories of icterus is in the rôle played by the lymph spaces surrounding the bile capillaries. Doubt has been cast on the existence of such spaces, and even Eppinger himself does not describe them as definite vessels, but merely as spaces between the walls of the bile capillaries and the liver cells. According to Minkowski, there is little doubt that such spaces exist. Eppinger seems to think that in icterus the bile must reach the blood by means of the lymph channels, and there is some support to this view in the old observations of Harley and von Frey, who showed that if the thoracic duct be ligated at the same time as the ductus communis choledochus no icterus would occur. This, of course, necessitates the view that while the blood capillaries of the liver are permeable for some substances they are not permeable for bile, an idea which is by no means unthinkable in the light of our present knowledge of cell specificity. Another point in which Eppinger's conception differs from preceding ones is the recognition of the bile-stained plugs in the capillaries as bile thrombi. These are not made up of pure bile, but are bile-stained concrements which form when, as a result of disturbances in the liver cells, abnormal substances are excreted with the bile. These bodies can, perhaps, more reasonably be compared to the urinary casts than to thrombi.

While this work of Eppinger explains the pathology of many cases of icterus, Minkowski points out that all cases examined since its publication have not shown these lesions. This is especially true of cases of infectious icterus. In just such cases it has been shown that the bile is often abnormal, and may contain albumin. Such cases are probably due primarily to the liver cell changes, though the bile thrombi and mechanical stasis may occur as secondary phenomena. Minkowski thinks that though the work of Eppinger has greatly extended our knowledge of the pathology of icterus we must still recognize two forms—the true obstructive icterus, in which mechanical obstruction plays the main part, and the toxic, cyanotic and nervous forms, in which the disturbance in the function of the liver cells is the important factor.

TRUTH AND POETRY CONCERNING URIC ACID.

II.

The history of uric acid dates from a year easily remembered by Americans. In 1776 the substance was discovered by Karl W. Scheele as the constituent of a concrement, and in the same year T. Bergman found it in a stone from the bladder. Soon after it was recognized as a normal ingredient of the urine; it was fated to become the object of a long series of studies. Pure chemists busied themselves with it for a time, Fourcroy (1793) finding urea among its decomposition products, and Wöhler and Liebig (1838), showing that it is closely related to allantoin, urea and alloxan. The majority of the earlier studies on uric acid were undertaken by medical men, and one of the most interesting features of medical research during the past hundred years is the patient but tortuous course followed by those who had as their object the determining of the mode of formation of uric acid in the body. At times the pursuit seemed to be utterly futile, so ignorant were those engaged in it of the direction it should take; more than once it was necessary, to use a sportsman's expression, to "hunt change," to take a fresh scent as it were, and to seek in an entirely new quarter.

The relationship of uric acid to urea naturally suggested a similar origin for the two substances, and the earliest theories took it for granted that uric acid, like urea, is a product of albumin metabolism. Since uric acid yields urea as one of its oxidation products, two hypotheses seemed plausible—either all albumin on oxidation to urea passes, at some time or another, through a uric-acid stage, or albumin is normally oxidized directly to urea, but under certain pathologic conditions to uric acid instead. In case either hypothesis were true, a fault of oxidation would account for the appearance of increased amounts of uric acid.

Thus Lehmann, in his "Physiological Chemistry," published in 1853, advanced the first hypothesis, assuming that uric acid stands a rung higher on the ladder of descending albumin metabolism than does urea. This view was accepted by many, and the idea became prevalent that an increased excretion of uric acid must be due to disturbances of the circulation or respiration leading to interference with the normal oxidizing processes of the body. Feeding experiments (Neubauer, 1856; Meissner, 1868; Weintraud, 1896, and Spiegelberg, 1898) demonstrated that uric acid in dogs or human beings is given off largely as urea in the urine, one study showing that not more than 5 per cent. of the uric acid fed reappears unchanged in the urine. Haig (1894) asserted that, feeding small amounts of uric acid to healthy men, he could demonstrate prompt and complete excretion as such in the urine, but he is alone in this as in so many observations which contradict the work of more accurate investigators. Of course, the fact that uric acid, like other nitrogenous substances, burns in the body to urea, is no proof that all urea goes through a uric-acid forestage, and investigators were soon to learn this.

The first hypothesis received telling support from Bartels[1] (1866), who sought evidence in its favor in clinical experience, or rather, who looked for facts that were not out of harmony with the hypothesis. He laid emphasis on the "relative" amount of oxygen available; if there were "relative" insufficiency of oxygen, uric acid, he thought, instead of urea is formed. Thus in certain fevers, like that in pneumonia or those accom-

1. Bartels: Untersuchungen über die Ursache einer gesteigerten Ausscheidung der Harnsäure in Krankheiten. Deutsches Arch. f. klin. Med., vol. i, 1866, p. 13.

panying circulatory disturbances, there might be increase in uric-acid formation owing to "relatively" insufficient respiration. Excess of uric acid in leukemic urine he cited as evidence of his view. Virchow had called attention to this increase in uric acid in leukemia as early as 1847, and regarded it as due to imperfect oxidation.

In this connection it is of great interest to note that Scherer,[2] as long ago as 1851, had found hypoxanthin in the spleen and in the blood in leukemia, and had put forward the theory that leukemia is due to a sort of hypersecretion of the spleen. Five years later he found both hypoxanthin and uric acid in the blood in leukemia. The chemical relations of hypoxanthin and uric acid were beginning to be known, and a hypothesis that the spleen is the source of uric acid gained credence for a time, Ranke[3] marshaling as arguments in its favor, (1) the increase of uric-acid excretion with accompanying splenic swelling during digestion; (2) the increase of uric acid in leukemia; (3) the presence of uric acid in the splenic juice; and (4) the action of quinin which reduces the size of the spleen and diminishes uric-acid excretion. The possibility of an origin of uric acid from hypoxanthin—excessively interesting considering our present knowledge of the purin bases—seemed to threaten the view that it is derived from albumin, until some one suggested that hypoxanthin might come also from albumin and be simply a still earlier forestage of urea. Moreover, Bartels' authority was so great that his conception was the dominant one in the minds of medical men for a long time.

Telling blows against Bartels' view were struck later when it began to be shown (1) that conditions which diminish oxidation or interfere with respiration are not necessarily associated with increased uric-acid excretion; and (2) that in leukemia, where uric-acid excretion is sometimes increased, there is no evidence that the oxidizing processes are diminished. Senator (1868) constricted the thorax of dogs and rabbits, and got increased uric-acid excretion in only two out of many cases; Naunyn and Ries (1869) did not find the uric-acid excretion increased in anemia produced experimentally; Pettenkoffer and Voit (1869) showed that nitrogenous and carbon-dioxid equilibrium are maintained in leukemia in spite of uric-acid increase, and finally, in 1891, Kraus and Chwostek, and in 1893, Bohland and Geppert proved that there is absolutely no decrease in the oxygen-intake, nor any decrease in the output of carbon dioxid, in cases of leukemia.

It can be seen, therefore, how it came about that some of the oldest conceptions regarding the formation of uric acid had to be given up. These old views have had a sort of recrudescence, however, from time to time, as will be pointed out further on, when we come to deal with the ideas which supplanted them.

2. Scherer: Untersuchungen über das Blut bei Leukämie, Verhandl. d. phys.-med. Gesellsch. z. Würzburg, vol. II, 1851, p. 321.

3. Ranke, H.: Beobachtungen und Versuche über die Ausscheidung der Harnsäure beim Menschen, München, 1858.

LOEFFLER'S NEW METHOD OF PRODUCING ANTIBODIES.

It is a familiar fact that the injection into the animal body of gradually increasing quantities of many substances gives rise to the production of specific antibodies. Among the most carefully studied substances of this class may be mentioned bacterial toxins, living and dead bacteria, red blood corpuscles, blood serum, organ cells, etc. By heating these substances, or by treatment with various chemicals, they are easily deprived of the power of calling forth antibodies. It often is desirable, however, to kill the bacteria that are used in the process of immunization before they are injected, because some living organisms, as, for instance, the tubercle bacilli, are not well borne by any of the animals that are suited for the production of antiserums. In other instances it may be necessary to sterilize the substance before it is used, because of the great difficulty of obtaining it without accidental contamination.

In these cases it has been difficult to find a convenient and reliable method of killing the bacteria without, at the same time, depriving them, or the substance which is being sterilized, of the power of calling forth antibodies. These difficulties were partly overcome by grinding up the bacteria to such a fine state that the mass no longer contained organisms capable of growth, or by sterilizing the accidentally contaminated substance with chloroform. These methods of sterilization are not perfectly reliable, and it not infrequently happened that the animal under treatment died in consequence of an injection of an imperfectly sterilized substance.

We know that enzymes, when perfectly dry, may be heated to a high temperature without being deprived of their specific properties. This fact led Loeffler[1] to attempt to produce antibodies with bacteria that had been dried and killed by heating to 150 C. for one-half hour. He not only used bacteria that were thus treated, but also blood serum, organ cells and tumor cells, and his labors seem to have been crowned with success. He dried chicken serum at a low temperature and heated the dry residue to 150 C. for one-half an hour. The residue was suspended in salt solution, and several doses were injected into a rabbit. The serum of this rabbit formed a heavy precipitate with normal chicken serum. Other heated sera were injected into various animals, and all gave rise to the formation of a specific precipitin. Loeffler dried and heated bacteria to 150 C. for one-half an hour, and immunized animals by injecting them with suspensions of the heated organisms. In this way he produced agglutinating sera for *B. typhosus*, *B. coli communis*, *B. choleræ*, the bacillus of hog cholera and the tubercle bacillus. He also obtained a serum with high bacteriolytic powers for the bacillus of cholera. Carcinoma

1. Deutsch. med. Woch., Dec. 22, 1904.

cells were dried and heated, and suspensions of the dry powdered cells were injected into a mule. The serum of this mule gave a precipitate with a colloidal solution of carcinoma tissue, and also with such a solution of lymphoid tissue. A woman suffering with carcinoma of the breast was treated with this serum and also with a solution of the heated carcinoma cells. There was local reaction and apparent general improvement, but no arrest of the growth of the tumor.

Loeffler claims that this method of desiccation, heating and pulverizing will allow the material to be kept for indefinite periods, and will eliminate all danger for those handling it. Just how much can be expected from this discovery can hardly be conjectured at this time, but it seems that it may find wide application in the production of various antiserums.

WARNING AGAINST PANAMA LABOR.

The danger of misconception of the conditions in Panama[1] has led the American Federation of Labor to send circulars over the country calling attention to the real status of affairs at the Panama Isthmus. The federation declares that it is not true that the work will be easy and the wages above the normal, and urges especially that no one should go to the canal zone unless he has a position and knows under what conditions he is to labor. The warning is a timely one. The glamor naturally attendant on this great government enterprise is heightened by the illustrated articles in the papers and magazines, in spite of the frequent mention of the diseases that have been so great a factor in the mortality rate. Many who go to Panama with a little knowledge of conditions there, are liable to desire a speedy return when their knowledge is increased. The great enterprise will not lack for workers, and it will only be hindered by illy prepared adventure-seekers.

THE GROWING IMPORTANCE OF PHYSICS IN MEDICINE.

Coincident with the rapid application of chemical methods to the study of medical problems, there has been a growth of interest in more purely physical phenomena, and especially in the phenomena of that ever-widening domain which we now know as physical chemistry. The publications of Van t'Hoff, Arrhenius and Ostwald have stimulated a whole series of medical and biologic researches, like those of Pauli and Loeb, on the one hand, and those of Koranyi, Hamburger and Höber, on the other. Zikel, in 1902, published a volume on what he calls "Clinical Osmology," which deals with the osmotic states of the body fluids in health and disease. It is surprising how rapidly clinical concepts are being widened as a result of the application of these newer ideas of physical chemistry. Only a beginning has, of course, as yet been made, but the work which has been done is full of promise for the future. On page 184 of this issue Stern discusses the relations of the modern science of osmology to pharmacodynamics. In the latter field also, as will be seen by a perusal of his article, he believes that purely physical influences play an extremely important rôle. Osmotherapy is likely, he thinks, to be one of the coming developments in practical medicine.

1. Announcement of the Civil Service Commission concerning conditions of service in Panama was given in THE JOURNAL, Dec. 17, 1904, p. 1881.

NATIONAL INCORPORATION OF THE AMERICAN MEDICAL ASSOCIATION.

On January 9 Congressman Dwight of New York introduced a bill[1] for the national incorporation of the American Medical Association by special act of Congress. This is of special interest to the members of the American Medical Association, and, in fact, to the members of the medical profession of the country. Obtaining recognition by Congress will not only add dignity to the body which represents the medical profession of the United States, but will give it a power and an influence for good which it would not otherwise have. We hope that every physician who has at heart the betterment of sanitary affairs of our country, and the various matters in which the medical profession is interested, will use his influence where it will do the most good. The bill was referred to the Committee on the Judiciary, and at the present time the matter is wholly in its hands. Consequently, all legitimate efforts should be made to convince its members of the value and importance of the measure. The members of the Committee on the Judiciary are: John J. Jenkins, Wisconsin (chairman); R. W. Parker, New Jersey; D. S. Alexander, New York; Vespasian Warner, Illinois; Charles E. Littlefield, Maine; Lot Thomas, Iowa; Samuel L. Powers, Massachusetts; Robert M. Nevin, Ohio; Henry W. Palmer, Pennsylvania; George A. Pearre, Maryland; J. N. Gillett, California; David A. De Armond, Missouri; David K. Smith, Kentucky; Henry D. Clayton, Alabama; Robert L. Henry, Texas; J. S. Little, Arkansas, and William G. Brantley, Georgia.

LONGEVITY OF JEWS.

It is claimed that of all classes of New York City's population, the Jews are the longest lived. Considering the manner in which the majority of the Jewish population of our great cities live, this is a remarkable showing, if true. The poorer Jews, as a rule, are rigid followers of the Mosaic law, and this would indicate to some extent the excellence of the sanitary provisions of that ancient code. Insurance men, however, it is alleged, while recognizing the temperance of the Jews as a factor, are inclined to think that this longevity is a result of natural selection, the weaker elements of the Jewish race having been gradually eliminated during centuries of persecution. There is still another possible factor to be considered. For centuries the Jews have become acclimatized, so to speak, to city life, and therefore may represent the class most resistant to such environment. There are evidences, however, that modern civilization is telling through its stress and strain on the vitality of the Hebrew race. Paresis, which was formerly said to be rare among them, was found by Beadles to be particularly frequent among the London Jews. It would be a matter of much interest if a thorough study were

1. The bill is printed in the General News columns, page 227.

made of this racial peculiarity of the Jews with special reference to its causal factors, and in comparison with special classes of the non-Jewish population and of wider scope than any such study yet made, both as to time and territory. It may take years, however, to reach positive conclusions, and in the meantime evolutionary changes may be taking place that will materially alter the conditions. A hundred years from now, and in even less time in some countries, the present distinctive Jewish element may have become entirely absorbed in the general population.

TOTAL ABSTAINERS AND LIFE INSURANCE.

Jews are not the only long-lived class, according to the New York actuaries. While the well-to-do Hebrew who takes life insurance is said to be 15 per cent. better risk than the average, total abstainers from alcoholic drinks make a still better showing—from 20 to 50 per cent. over the moderate drinkers, including the Jews. The average Jew is probably not a total abstainer, and it would be of interest, if it were possible, to study out by comparison with the teetotalers the reason for the advantage of the latter. From 5 to 35 per cent. is therefore the percentage that can be credited in favor of abstinence. Of course, there are many elements that enter into the solution of the question beside the mere abstinence from alcohol, such as the probable relatively lesser frequency of accidents and exposure, etc. It seems pretty clear, however, that the advantage is with the total abstainers, and that even moderate drinking detracts from the tendency to longevity.

THE NOBEL AWARDS.

It has been a matter of some unfavorable comment that while nearly all of the European countries, except Italy and Austria, have been represented in the awards of the Nobel prizes, thus far America has been left out. It has been suggested that many of our inventors and investigators who have achieved special eminence have worked largely from practical and money-making motives, and have not been inspired sufficiently by the true scientific spirit. While this is true of a number of our great men, it has no reference whatever to a large number who ought to be mentioned as candidates for the Nobel prizes. The public here is inclined to think more of the practical side, to magnify the work of a Morse, rather than that of a Henry, on which it was based. The names of Edison, Tesla, Bell and others are everywhere familiar, while the names of those who established the principles on which the inventions depend are hardly known. In connection with this, it is of interest to note what is perhaps the principal reason—the real reason—why American workers have not been selected for the prizes. Under the conditions of the bequest of Nobel, personal applications are not received; the names of candidates must be presented for consideration by some recognized learned or scientific association or university faculty, thus relieving the awarding committee of the preliminary labor of searching out those who may be considered worthy by their compatriots or associates. When we look over the field of medicine, which is one of those in which the prizes are awarded, it does seem as if some disinterested work and some names worthy of consideration might be suggested to the awarding bodies. There has been no more fruitful or important work in the past few years than the discovery of the cause and means of prevention of yellow fever, and some survivors of that investigation have never received full recognition of their services except among their scientific brethren. The names of others whose work deserves this recognition will at once occur to scientific bodies. The American Medical Association and other organizations should see to it that their lack of activity on the subject no longer leaves an excuse for the committee to ignore America.

THE EFFICIENT JAPANESE ARMY MEDICAL DEPARTMENT.

World's Work for January contains an admirable note on "A New Epoch in Army Mortality," having for its text the effective work of the Japanese army medical corps. The Japanese medical officers are rightly praised for their work in superintending the personal hygiene of the soldier, as well as in superintending the sanitation of trench and camp. Comparing their work with that of our own army medical corps, our contemporary finds the difference in efficiency to lie "in organization and in the obedience of the men." This is a half truth. As we all know, the chief reason for the disgraceful sanitary regulations of the American Army in the Spanish war was the absence of authority in the hands of the medical officers. The Japanese medical officer can order the troops to obey certain hygienic rules. Our Army organization permits the surgeon merely to suggest. When, as at scourged Camp Chickamauga, a line officer, ignorant and self-sufficient, is in command, he can sneer at the medical recommendations which in his wisdom (?) he overrules, and may likewise be too callous to appreciate the disgrace and the personal responsibility for hundreds of needless deaths from preventable fever. The Japanese line officers may be better trained and may have a wide intelligence, but over all stands the fact that Japan provides her army medical corps with a sufficient number of members and with authority to execute those necessary precautions that are within the common knowledge of the medical profession of the world. Every American should feel chagrined that a yellow race should conduct a war with more scientific enlightenment and with greater care for the health of its soldiers than we ourselves are prepared to do. Congress has put our country far to the rear in one of the foremost characteristics of modern civilization. No fear of our soldiers not "obeying" if but an educated man is given command. No soldier is better, and whenever our authorities give the medical corps its due, it will show that the American medical officer, too, can save lives. To the closing question of our contemporary there is but one answer: the "general incredulity born of ignorance" is responsible for American disregard of medical advice. If our esteemed contemporary will for a time follow the medical press, it will readily discover that the medical profession is not to blame for public inattention to its endeavors to prolong life and to promote well-being.

Medical News.

ARKANSAS.

Asylum Report.—The biennial report of the superintendent of the Arkansas State Lunatic Asylum, Little Rock, shows that 3,631 have been admitted into the institution since it was established, and 236 in the last two years.

Smallpox in Pulaski County.—According to a statement issued by the county physician, there are about thirty-five cases of smallpox in the county, outside of the towns of Little Rock and Argenta. These cases were mostly among the negro population in the vicinity of Jacksonville and McAlmont.

CALIFORNIA.

Hospital Open.—Good Samaritan Hospital, Los Angeles, was formally reopened December 29 after improvements and enlargements had been made costing $1,000,000. It now can accommodate 100 patients.

Personal.—Dr. Hubert N. Rowell, Berkeley, has been appointed attending physician at the California State Home for the Adult Blind.——Dr. Jules A. Simion has been made a member of the San Francisco Board of Health, vice Dr. J. Coplin Stinson, resigned.——Dr. Luther M. Powers has been appointed health officer of Los Angeles, Dr. Harris Garcelon, assistant, and Dr. Sumner J. Quint, police surgeon.——Dr. Ferdinand Stabel, Redding, has been appointed physician and health officer of Shasta County.——Dr. John L. White has been made superintendent of the Sacramento County Hospital.

COLORADO.

Fire in Hospital.—Fire in the fifth floor of St. Mary's Hospital, Pueblo, nearly caused $25,000 damage and necessitated the removal of most of the patients, fortunately without casualty.

Sanitarium for La Junta.—The La Junta Sanitarium Company has been incorporated with a capital stock of $25,000, by Drs. James F. Kearns, Edward W. Ragsdale, Frank Finney, Jessie E. B. Stubbs, E. Gard Edwards, Benjamin F. Haskins and others. A hospital will be built, and a cottage sanitarium for tuberculosis will also be erected.

Self-Advertisement.—About a year ago the Otero County Medical Society requested the newspapers of the county to refrain from mentioning in any way the name of any member of the society in news items relative to illness or accident. In La Junta the request has been complied with except in two instances, and the editor has promised not again to offend.

CONNECTICUT.

Personal.—Dr. Joseph E. Root, Hartford, surgeon of the First Company, Governor's Horse Guard, has resigned.——Dr. Charles I. Page, Litchfield, and William J. Ford, Washington, have been appointed by the adjutant general post surgeons for Litchfield County.

Bequests.—An unknown benefactor has given $15,000 to Grace Hospital, New Haven, to be used for enlargement of the nurses' dormitory.——By the will of Miss Maria Terry, who died recently in Venice, Hartford Hospital will receive nearly $500,000.——Mrs. Israel Matson Lyme has bequeathed $5,000 for the use of Memorial Hospital, New Haven.

December Mortality.—During December 1,258 deaths were reported, equivalent to an annual death rate of 15.5 per 1,000. This was 96 more than in November, 89 less than in December, 1903, and 40 less than the December average for the preceding five years. Diseases of the nervous system caused 161 deaths; pneumonia, 153; heart disease, 135; consumption, 102; violence, 64; bronchitis, 33; and la grippe and diphtheria, each 26.

GEORGIA.

Donations for Hospital.—About $11,000 has been raised for the Wesleyan Memorial Hospital, Atlanta, and a prominent Methodist has, it is understood, offered to give $12,500 provided the Methodists of Atlanta would contribute a like sum.

Personal.—Drs. F. M. Ridley, La Grange, and W. Darracott Travis, Covington, have been appointed members of the Board of Medical Examiners for three years, beginning January 7.——Dr. Bernard Wolff has been elected a member of the Atlanta Board of Health.

Kills Vaccinator.—Boss Garrett of Sandersville shot and killed Special Officer Gideon Mathews, December 23, while resisting arrest for refusing to submit to compulsory vaccination. Garrett was shot through the thigh while attempting to escape and is not expected to live.

Society Election.—At the annual meeting of the Chatham County Medical Society of Savannah, January 4, the following officers were elected: Dr. George R. White, president; Drs. Ralph M. Thompson and John L. Farmer, vice-presidents; Dr. J. L. Jackson, recording secretary; Dr. A. L. R. Avant, treasurer; Dr. J. Lawton Hiers, corresponding secretary; Dr. Gustaf H. Johnson, librarian, and Drs. Marion X. Corbin, John W. Daniel and Alpheus B. Simmons, censors.

ILLINOIS.

Bogus Doctor Fined.—"Dr." Black, Rockford, charged with practicing medicine without a license, was fined $100 and costs, January 6. Black claimed that he had a diploma, but that it was in the hands of a saloonkeeper in Janesville, Wis.

Personal.—Dr. James W. Pettit, Ottawa, was thrown from his buggy January 1 while making a late call and sustained a compound fracture of the left arm above the elbow.——Dr. Benjamin L. Euans, Watseka, returned from Europe January 7.——Dr. Denslow Lewis, Chicago, is suffering from typhoid fever.

Hospital Elects Officers.—At the annual meeting of the officers and trustees of Brokaw Hospital, Bloomington, Dr. James B. Taylor was elected president; Dr. J. Whitefield Smith, vice-president; Dr. John W. Fulwiler, secretary and treasurer; Dr. Ernest S. Reedy, medical representative, and Drs. John H. Fenelon, Asa S. Fox and Covey were recommended as members of the staff.

Chicago.

Hospital to Expand.—The Passavant Memorial Hospital has acquired from O. B. Green, property adjacent to its present building, and will erect thereon a dormitory for nurses.

The Death List.—The total deaths reported, 542, were the same in the aggregate as for last week, but there were some curious changes in the individual causes of death. The following among the important show increases: Acute intestinal diseases, 7; apoplexy, 12; consumption, 11; cancer, 5; convulsions, 10; influenza, 12; suicide, 7, and typhoid fever, 3. Important causes showing decreases were: Diphtheria, 3; heart disease, 15; nervous diseases, 9; pneumonia, 27; whooping cough, 3, and measles and scarlet fever, 1 each.

The Dangers of Influenza.—The Health Department in the current issue of its Bulletin, warns strenuously against influenza, and says:

> Influenza is more prevalent and more fatal in Chicago this winter than at any time since the epidemic year 1891; twenty more deaths from this cause were reported during the week. In 1891 influenza was the chief agent in increasing the death rate more than one-fifth over that of 1890 and numbers of the survivors have never since regained their former condition of mental and physical health. This added terror of the disease makes it all the more important that nothing should be neglected which may tend to its restriction, and to this end the commissioner again points out that influenza or the "grip" is a germ disease, and therefore contagious. Hence the obvious thing to do is to follow the advice of the authorities: Keep out of the way of contagion.

The Hospital Staff.—The long-awaited announcement of the appointments to the attending staff of the Cook County Hospital has been made. The regular staff is as follows: Medicine—Drs. Robert H. Babcock, Maurice L. Goodkind, Winfield S. Harpole, James B. Herrick, Charles L. Mix, Joseph L. Miller, Robert B. Preble, Bertram W. Sippy, Samuel R. Slaymaker, Frederick Tice, Camillo Volini and Edward F. Wells. Obstetrics—Drs. Rudolph W. Holmes, Henry F. Lewis, Charles B. Reed and Rachelle Yarros. Children and Contagious Diseases—Drs. William L. Baum, Frank B. Earle, Isaac A. Abt, Frank S. Churchill, Frank X. Walls and George H. Weaver. Nervous and Mental Diseases—Drs. Sidney Kuh, Julius Grinker, L. Harrison Mettler and Harold N. Moyer. Surgery—Drs. E. Wyllys Andrews, Frederic A. Besley, Albert I. Bouffleur, Thomas A. Davis, Charles Davison, William E. Schroeder, C. W. Haywood, Aime P. Heineck, Orville W. Mackellar, B. Brindley Eads, Daniel N. Eisendrath, Malcolm L. Harris, A. E. Halstead, William Hessert, Frederick S. Hartman and Charles E. Humiston. Ophthalmology—Drs. William E. Gamble and Brown Pusey. Ear, Nose and Throat—Drs. Frank Allport and G. Paull Marquis. Skin and Venereal Diseases—Drs. L. Blake Baldwin and William A. Pusey. Pathology—Drs. William A. Evans and Edwin R. Le Count. Orthopedic Surgery—Dr. John L. Porter; and X-Ray, Dr. Edward A. Fischkin. Dr. William L. Baum was elected president of the staff.

INDIANA.

St. Mary's Hospital, Evansville, has recently been enlarged so that it can now accommodate 125 patients. An operating pavilion has also been added and a pathologic laboratory installed. At the annual meeting the following attending staff was appointed: Surgery—Drs. Pitt Y. McCoy, Charles P. Bacon and George W. Varner. Medicine—Drs. Joseph N. Jerome, Sidney J. Eichel, and Clarence Kelsay. Eye and Ear—Dr. Louis D. Brose; and Electrotherapeutics—Dr. William R. Davidson.

Suit Against Physicians Dismissed.—In the $5,000 damage suit brought against Drs. Frederick C. Eckelman and Metius M. Eckelman, Elkhart, for alleged malpractice in the treatment of a broken leg, the case against Dr. Frederick C. Eckelman was dismissed before the trial began on the ground that he was not in partnership with his son and had had nothing whatever to do with the treatment of the plaintiff; and after a three days' trial the jury returned a verdict for the remaining defendant, Dr. Metius M. Eckelman, completely exonerating him.

November Sickness and Death.—The most prevalent malady was bronchitis, which stood third in the preceding month. Typhoid fever dropped from second to fourth place. The order of prevalence was as follows: Bronchitis, tonsillitis, rheumatism, typhoid fever, scarlet fever, influenza, pneumonia, diarrhea, smallpox, pleuritis, diphtheria, inflammation of bowels, whooping cough, puerperal fever, measles, cerebrospinal meningitis. Smallpox was reported in 37 counties, with 335 cases and 12 deaths. Tuberculosis caused 337 deaths, 31 being non-pulmonary; females, 201; males, 136. Of the females 68 were married, between the ages of 18 and 40, and left 140 orphans under 12 years of age. Of the males 19 were married, of the same age period as above, and left 38 orphans. The total number of orphans caused by this disease in this month was 178. More than 300 homes were invaded. Of the 92 counties, 61 reported typhoid fever present, and probably it existed in every one of them. In the month 403 cases were reported, with 141 deaths. The disease was epidemic in Marion, Parke, Shelby, Vanderburg, Wabash, Clark, DeKalb and Grant counties. Pneumonia deaths numbered 229. The total number of deaths reported was 2,566, equivalent to an annual rate of 11.7 per 1,000. In the same month last year there were 2,516 deaths, a rate of 11.3 per 1,000.

MARYLAND.

Insane Hospital Report.—The one hundred and seventh annual report of the Maryland Hospital for the Insane shows the total number of patients under care during the year as 636. The average number of patients under treatment was the greatest in its history and its utmost capacity is reached.

New Staff Members.—The following have been added to the Cambridge Hospital staff: Orthopedic surgery, Dr. William S. Baer, Baltimore; surgery, Drs. Isaac R. Trimble, Baltimore, and William H. Noble, Philadelphia; obstetrics, Dr. Lewis M. Allen, Baltimore. A number of physicians from the Eastern Shore were made consultants.

Consumptive Hospital.—Dr. Henry Barton Jacobs has been re-elected president of the Hospital for Consumptives. The receipts for the year were $7,649, and expenditures $8,145, but of the deficit all has been raised except $500. There were 100 patients treated, 17 of whom remained only two weeks; 6 were discharged apparently cured; 16 died; 26 showed improvement. The average cost per patient for the year was $81.45.

Baltimore.

A Good Record.—There has been no case of smallpox in this city since July 1.

Coroners Busy.—Between May 1 and Dec. 31, 1904, the nine coroners of Baltimore investigated 830 deaths and held inquests in 65 cases, a total of 895.

The Herter Lectures.—Dr. Hans H. Meyer, professor of pharmacology in the University of Vienna, has accepted an invitation to deliver the second course of Herter lectures at the Johns Hopkins Medical School next October.

Disinfection of Library Books.—The Enoch Pratt Free Library has not installed any apparatus for the fumigation of books, as the Health Department provides for it. The department sends lists two or three times a week showing houses in which there are patients suffering from contagious diseases. These are kept for reference and when books are returned from any of them the assistants refuse to accept them unless either a physician's certificate is shown or a Health Department certificate that the volume has been fumigated. There has been no case of infectious disease among the employes in twenty years.

Hospital Reports.—At the Hebrew Hospital the receipts for the year were $20,020, leaving a deficit of $2,243. During the year 229 patients were admitted, of whom 101 were discharged cured, 90 improved, 10 unimproved and 10 died. In the dispensary 6,908 patients were treated and 7,532 prescriptions compounded. Improvements will be made in the operating room at a cost of $3,000. Dr. Samuel L. Frank was re-elected president of the association.——At the Presbyterian Eye, Ear and Throat Hospital last year 11,000 patients were treated. The visits to the out-patient department averaged 102 per day, and operations were performed as follows: Eye, 1,782; ear, 168; throat, 770.

Personal.—Dr. Howard A. Kelly has returned from a two weeks' hunting trip in the wilds of Florida.——Dr. George Y. Everhart, speaker of the last House of Delegates, has been appointed clerk in the state treasurer's office.——At the one hundred and fourth annual meeting of the managers of the Baltimore General Dispensary, held January 12, Drs. Haughton A. Baxley, Edward E. Mackenzie and Leonard E. Beach were elected attending physicians.——Dr. Curtis R. Burnam, resident gynecologist at the Johns Hopkins Hospital, has resigned and will go to St. Paul, Minn., to practice. Dr. G. R. Holden succeeds him.——Dr. Frank W. German fell on the ice January 7 and sustained a fracture of the left fibula.——Dr. William H. Baltzell is spending the winter in Egypt.

MICHIGAN.

Scarlet Fever Epidemic.—In East Tawas there are 18 cases and the disease is spreading rapidly. The public schools have been closed. One death has occurred.

Declines Appointment.—Dr. Thomas B. Cooley, Ann Arbor, who was selected by the Washtenaw County board of supervisors as consulting physician in cases of contagious disease, with a maximum fee of $15 and expenses for each case, has declined the appointment on account of the fixed fee and expenses.

The Most Dangerous Communicable Diseases.—Meningitis was reported during December at 5 places, whooping cough at 19 places, measles at 51 places, pneumonia at 82 places, diphtheria at 91 places, smallpox at 101 places, typhoid fever at 105 places, scarlet fever at 126 places, and consumption at 241 places. Meningitis was reported present at 1 place less, whooping cough at 1 place more, measles at 16 places more, pneumonia at 23 places more, diphtheria at 4 places more, smallpox at 2 places more, typhoid fever at 56 places less, scarlet fever at 21 places more and consumption at 6 places less, in the month of December, 1904, when compared with the preceding month.

Comparative Prevalence of Disease.—For December, 1904, compared with the average for December in the last 10 years, smallpox, dysentery and inflammation of brain were more than usually prevalent; and pleuritis, pneumonia, intermittent fever, erysipelas, diphtheria, whooping cough, remittent fever, cholera morbus, puerperal fever and meningitis were less than usually prevalent. In every month of 1904 six of the diseases which were less prevalent than usual in December—pneumonia, intermittent fever, erysipelas, whooping cough, remittent fever and cholera morbus—caused considerably less sickness than the average of corresponding months in preceding years. Also, excepting July and August, this was true of pleuritis. Ten diseases caused less sickness in December, 1904, than the average for the ten preceding Decembers.

Mortality of Michigan During December, 1904.—The total number of deaths reported to the department of state for the month of December was 2,782, corresponding to a death rate of 13.0 per 1,000 population. This rate is higher than that for the preceding month, which was 11.6 per 1,000, but lower than the rate for December, 1903, which was 14.1 per 1,000. By ages there were 519 deaths of infants under 1 year of age, 133 deaths of children aged 1 to 4 years, and 922 deaths of persons aged 65 years and over. A considerable increase is shown for the rate of mortality of infants and the aged as compared with November. Important causes of death were as follows: Tuberculosis of lungs, 176; other forms of tuberculosis, 26; typhoid fever, 51; diphtheria and croup, 50; scarlet fever, 12; measles, 5; whooping cough, 10; pneumonia, 234; diarrheal diseases of infants, 42; meningitis, 35; influenza, 34; cancer, 148; accidents and violence, 181. There were two deaths from smallpox.

NEW JERSEY.

Board of Health Election.—At the annual meeting of the Atlantic City Board of Health Dr. John R. Fleming was elected president; Dr. M. Le Roy Somers, vice-president, and Dr. Edward Guion, secretary.

Deaths Exceed Births.—The report of the Bureau of Vital Statistics of Camden shows that during the year just closed there were 1,869 marriages, 1,497 births and 1,532 deaths, thus showing 35 more deaths for the year than births, provided all births were reported.

Personal.—Dr. Henry W. Elmer of Bridgeton sailed January 12 for Port Antonio, Jamaica.——Dr. Emery Marvel, Atlantic City, had a septic wound of the finger from the puncture of a needle while operating, but is now rapidly recovering.——Dr. Leslie L. Hand, Millville, is seriously ill with diphtheria contracted from repeated exposures to the infection in his practice.

A Useful Circular.—The Atlantic City Board of Health has issued a leaflet of information for the family in case of contagious diseases, which takes up plainly and concisely the general precautions to be observed, and then gives special recommendations regarding typhoid fever, scarlet fever, diphtheria, measles, whooping cough, mumps, chickenpox and disinfection. This is intended "not to supplant but to supplement the advice of the family physician."

Cooper Hospital Report.—The annual report of the Cooper Hospital, Camden, for 1904 shows that 1,040 patients were treated in the wards; 772 were discharged cured, 85 improved, 85 not improved, and 17 left without permission. There were 115 deaths, and of these 46 occurred within forty-eight hours from the time of admission to the hospital. The average stay of each patient was 17 days. In the dispensaries 4,593 patients were treated, and 13,571 revisits were made, making a total of 18,164.

Medical Inspector's Report.—The report of Dr. Henry H. Davis, medical inspector of the Camden public schools, showed the following communicable diseases reported for investigation during December: Diphtheria, 13; scarlet fever, 16; chickenpox, 11; measles, 9; tonsillitis, 19; ophthalmia, 5, and variola, 1. The report further shows that there was a decided increase in the cases of scarlet fever and diphtheria over the corresponding month of last year. He attributes the spread of the disease to its mild form, as it was not recognized and not treated.

Society Elections.—At the annual meeting of the Atlantic County Medical Society, January 13, Dr. Emery Marvel, Atlantic City, was elected president; Dr. Edward H. Madden, Absecon, vice-president; Dr. Edward Guion, Atlantic City, secretary and treasurer, and Dr. A. Burton Shimer, Atlantic City, reporter.——At the regular meeting of the Atlantic City Academy of Medicine, January 13, the following officers were elected: President, Dr. William E. Darnall; vice-president, Dr. Edwin H. Harvey; secretary, Dr. Walt. P. Conaway, and treasurer, Dr. J. Addison Joy. A committee on ways and means was appointed, consisting of Drs. Philip Marvel, William E. Darnall and W. Blair Stewart, to take steps toward the establishment of a first-class medical library.——At the annual meeting of the Burlington County Medical Society, held January 12, the following officers were elected: President, Dr. J. Howard Pugh, Burlington; vice-president, Dr. Frank G. Stroud, Moorestown; secretary, Dr. George T. Tracy, Beverly; treasurer, Dr. Enoch Hollingshead, Pemberton, and censors, Drs. Alexander Marcy, Jr., Riverton; Elmer D. Prickitt, Mount Holly, and Alexander H. Small, Riverside.

NEW YORK.

Many Insane.—While the certified capacity of the New York State hospitals for the insane is 22,000, the number of patients is 25,019. The most serious condition is on Ward's Island, where, with a capacity of 3,100, there are over 4,100.

Ithaca Water Supply.—A commission has been appointed by Justice Lyon of Binghamton to determine the value of the property of the Ithaca Water Works Company, lately condemned by the city of Ithaca, for the purpose of installing an artesian water supply.

State Charities.—The State Charities Aid Association held its annual meeting January 10. The annual report called especial attention to the overcrowding of the hospitals for the insane. A bill passed by the last legislature through the influence of this association provides for the establishment of a psychopathic hospital for the reception and examination of the alleged insane in New York City. It is hoped that this will, in a very large degree, obviate the stigma which now attaches to a commitment to an insane asylum, and that by securing earlier treatment of incipient cases of mental disease permanent commitment in a certain number of cases will be unnecessary.

New York City.

Fewer Street Accidents.—A decrease of 23 per cent. in the number of street accidents from those of last year is shown. This is attributed to the new scheme of traffic regulation and to the work of the mounted squad.

Increase in Pneumonia.—There were more pneumonia cases reported at the hospitals January 14 than on any previous day this winter. The number of cases now reported is above the average of normal years, though not so high as last winter, when 12,366 persons died of the disease.

Pneumonia.—Bellevue Hospital is crowded to overflowing with cases of pneumonia, bronchitis and influenza. At Roosevelt Hospital there has been no such run of pneumonia cases. This hospital, however, has had more applications than it could accommodate. One medical ward, accommodating 28 patients, has been closed for lack of funds.

Contagious Diseases.—There were reported to the sanitary bureau for the week ending January 7, 300 cases of diphtheria and croup, with 45 deaths; 282 cases of tuberculosis, with 168 deaths; 227 cases of scarlet fever, with 22 deaths; 122 cases of measles, with 11 deaths; 47 cases of typhoid fever, with 11 deaths; 138 cases of varicella, and 24 deaths from cerebrospinal meningitis.

To Prohibit Fireworks.—The chief of the fire department recommends that the sale of fireworks in this city be prohibited on July Fourth, because of the danger of numerous fires and because of loss of life and maiming of children. During the week of July 4, last year, 846 persons were taken to the various hospitals suffering from injuries from fireworks. This has been referred to the Municipal Explosive Commission.

Medical Society's Rights Questioned.—An application of importance has been made to Judge Leventritt, in the special term of the Supreme Court. It asserts that the law which gives the county medical society the fines imposed on persons prosecuted by its agents is unconstitutional. It is proposed to carry this case to the Court of Appeals. It has been asserted that benefits such as these conferred on the county medical society have already been pronounced unconstitutional. It is held that the fines are the property of the state.

New Red Cross Hospital.—This society is to have a new hospital which is to rival in completeness every other hospital in the city. William T. Wardwell has given $100,000 for the purchase of a site. John S. Huyler has donated all the brick necessary to construct the building, and an endowment fund has been started with a subscription of $3,000. Dr. A. Monae Lesser, who was surgeon-in-chief to the Red Cross Hospital during the Spanish-American War, will be surgeon-in-chief of the hospital. One of the objects of this institution will be to keep both physicians and nurses in readiness for government calls.

New York Water Supply.—James K. Apgar has a bill before the legislature excluding New York from tapping any of its streams in Westchester County for additional water supplies and also for repealing the Webster act, which enabled the city to secure land by condemnation for extension of its water-supply system. The passage of the Smith bill last year barred New York from seeking a water supply in Dutchess County, and it is stated that the representatives of Columbia and Ulster counties contemplate bringing in similar bills. These steps seem to complicate the difficulties of securing an adequate water supply for the city, but it is hoped that Governor Higgin's suggestion of appointing a state commission for the conservation of the waters of the Adirondacks and having also for its object the supply of water to the cities may hold the solution of this problem.

Buffalo.

Measles Epidemic.—There is no diminution in the number of measles cases in Buffalo. It is especially prevalent in the tenement districts among the Italians and Poles where exposure is almost a necessity because of overcrowding.

Personal.—Dr. H. Y. Grant has returned from Palm Beach.——Dr. Lawrence J. Hanley has been appointed obstetrician to the Maternity Hospital.——Dr. James Gallagher has been appointed visiting physician to the Emergency Hospital.——Dr.

Charles S. Jewett has been elected president of the medical staff of the Sisters of Charity Hospital.——Dr. Benjamin Grove has been elected president of the Emergency Hospital staff.——Dr. Thomas Crowe has been elected chairman of the Board of Civil Service Examiners.

OHIO.

The **Academy of Medicine** of Toledo and Lucas County elected officers January 13 as follows: President, Dr. Thomas Hubbard; vice-president, Dr. Dice; secretary, Dr. Levison; financial secretary, Dr. Duncan; treasurer, Dr. John Keller; board of censors, Dr. Hasencamp; delegate to state society, Dr. Myers.

Personal.—Dr. Dwight B. Taylor, Madison, has been appointed surgeon to the Marion (Ind.) Branch, National Home for Disabled Volunteer Soldiers.——Dr. James W. Miller, Cincinnati, has been appointed district physician in place of Dr. William Muhlberg, resigned.——Dr. Louis Ransohoff, interne in the Cincinnati Hospital, sustained a fracture of the patella.

Consolidation of Medical Schools.—Dr. Charles Dabney, president of the University of Cincinnati, as the guest of the Cincinnati Academy of Medicine, January 9, delivered an address on "Medical Education," in which he expressed the hope that there would shortly be a consolidation of all the medical schools of the city, and the establishment of a medical college which could compete with the larger institutions in the East.

Danger of Contamination of Cincinnati's Water Supply.—The movement to dam the Ohio river at Cullom's Ripple has met with opposition from some, who claim that such a structure would cause contamination of Cincinnati's water supply. Dr. Byron Stanton, member of the Ohio State Board of Health, believes, on the contrary, and in this belief was sustained by other experts, that a uniform stage of water would greatly improve the drinking water.

Cincinnati's Sources of Tuberculosis.—At the regular meeting of the Cincinnati Society for Medical Research Dr. B. F. Lyle, in a paper on "The Sources of Tubercular Infection in Cincinnati," declared that infection of infants by way of the intestines and through the medium of cow's milk is seemingly rare; that the death rate from tuberculosis among school children is small, and that death certificates are not a true index of the frequency of deaths from tuberculosis.

PENNSYLVANIA.

Philadelphia.

New Surgeon for Howard Hospital.—Dr. Francis D. Patterson was elected surgeon to the Howard Hospital, vice Dr. Charles H. Frazier, resigned.

Osler's Portrait for the University.—The graduates of the Medical Department of the University of Pennsylvania who studied under Dr. Osler have taken steps to have a life-size portrait of their teacher painted and placed in the university. Graduates of the classes from 1885 to 1892 will assist in securing the painting.

Hospital Reports.—During December 4,670 patients were treated in the Medico-Chirurgical Hospital——Eighty-three patients were admitted to the Jewish Hospital in December, which, with 52 under treatment at the beginning of the month, made a total of 135; 68 were discharged cured, 13 improved and 1 died.——At the Mathilde Adler Loeb Dispensary 1,014 patients were treated.—At the Jewish Maternity Hospital 19 patients were admitted and 13 infants born.

Cancer Annex Opened.—The new cancer annex of the Home for Incurables was opened for the treatment of patients January 11. It is a three-story brick structure. The floors are of tile, the walls of cement, covered with enamel paint. There are 16 rooms for patients, 4 for nurses, a smoking room, 2 dining rooms, diet kitchen on each floor and separate lavatories for patients and attendants. At one end are verandas 12 feet wide and 40 feet long.

Personal.—Dr. Alexander C. Abbott was the guest at the annual meeting of the Kansas City Alumni Association of the University of Pennsylvania, January 6.——Dr. Albert P. Francine, under the auspices of the Henry Phipps Institute, spoke in Carnegie Hall, Pittsburg, January 12, on "To-Day's Crusade Against Consumption."—Dr. Milton J. Greenman was elected director of the Wistar Institute of Anatomy and Biology to succeed Dr. Horace Jayne, resigned.

Medical Club Elects Officers.—The Medical Club of Philadelphia held its annual meeting January 13 and elected the following officers: President, Dr. Roland G. Curtin; vice-presidents, Drs. Wharton Sinkler and Thomas G. Potter; secretary, Dr. J. Gurney Taylor; treasurer, Dr. L. H. Adler, Jr.; governor, for five years, Dr. James Van Buskirk, and executive committee, Drs. Ernest Laplace, Ernest Whitcome, Edward E. Montgomery, Walter L. Pyle and Alexander McAllister.

Bequests.—By the will of James Beckman, Doylestown, the Methodist Hospital receives $1,000.——A legacy of $2,000 was left by the will of Hannah Adler to the Jewish Hospital Association for the Mathilde Adler Loeb Dispensary.——By the will of William S. Bunting $500 was left toward the establishment of a free bed in the Episcopal Hospital as a memorial to his mother, and $500 to the Home for Incurables.——A check for $5,000 has been given to the Jewish Hospital Association by Samuel M. Fridenberg and children to endow a room in the hospital in memory of Mrs. Fridenberg.——By the will of Henry Norris $5,000 each was bequeathed to the Hospital of the University of Pennsylvania, the Pennsylvania and the Children's Hospital.

Health Report.—Pneumonia continues present in a highly malignant type, 80 deaths being due to that disease during the week. This is an increase of 18 over those of last week, and an increase of 11 over those of the week before. The total death rate was also somewhat increased, the total reaching 500, as compared with 478 last week and 736 for the corresponding period of last year. The principal causes of death were as follows: Diphtheria, 10; pulmonary tuberculosis, 52; cancer, 15; apoplexy, 25; heart disease, 54; pneumonia, 95; enteritis, 22; Bright's disease, 43, and accidents, 12. The total number of contagious diseases reported was 222, with 24 deaths, as compared with 236 and 25 deaths for the preceding week. There were no cases of smallpox reported.

GENERAL.

Biologic Station in the Bermudas.—Harvard and New York universities have agreed to conduct a biologic station in the Bermuda Islands for ten years.

The Charities of 1904.—The record for the past year shows that $62,000,000 has been given to charities in the United States. Of this sum it is estimated that hospitals have received $2,543,000. These figures are only approximate, being a compilation of published announcements.

Beri-Beri in America.—Two cases of beri-beri were discovered at the quarantine station at Marcus Hook January 8. The vessel came from Koanapali, Hawaiian Islands. The men were placed in the quarantine hospital and the crew in the detention wards and the ship was fumigated. This is the second time within a year that beri-beri has been discovered at the Philadelphia quarantine station.

Army Appropriation Bill.—January 7 the House Committee on Military Affairs practically completed the Army Appropriation bill. It carries, in round numbers, $69,000,000, which is about $3,000,000 less than the estimates and $5,500,000 less than the appropriations for the current year. For the construction and repair of hospitals, $315,000 was appropriated, a reduction of $75,000 from the previous year; for the medical and hospital department, $600,000 was appropriated, an increase of $40,000.

Yellow Fever Suspects.—The Panama Railroad steamship which arrived from the isthmus had on board Mr. Seager, secretary to Chief Engineer Wallace of the Panama Canal Commission, who was bringing the body of his wife, who died of yellow fever, home for interment. Mr. Seager is also supposed to have the disease and has been sent to Hoffman Island for observation.——The purser of the Ward line steamship *Vigilancia*, arrived from Havana, is supposed to be a victim of yellow fever and has been removed to Swinburne Island for observation.

Want to Release Lepers.—An attempt has been made in Hawaii to secure the release of certain lepers from the settlement at Molokai, the basis of the attempt being the contention that a person can not be deprived of liberty without due judicial process. Objection is made to imprisonment by administrative process. This refers to the custom of simply having a suspect inspected by the government physician, then sending the suspect to the receiving hospital where a board appointed by the Board of Health decides whether or not the case is one of leprosy and deals accordingly.

Bill to Incorporate American Medical Association.—The bill to incorporate the American Medical Association (H. R. 17335), was introduced in the House of Representatives, Jan. 9, 1905, by Mr. Dwight. The bill was referred to the committee on the ju-

diciary and was ordered to be printed. It is as follows: A Bill to incorporate the American Medical Association. Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Robert M. O'Reilly, doctor of medicine, Washington, D. C.; Presley M. Rixey, doctor of medicine, Washington, D. C.; Walter Wyman, doctor of medicine, Washington, D. C.; E. H. Gregory, doctor of medicine, St. Louis, Mo.; Henry O. Marcy, doctor of medicine, Boston, Mass.; Nicholas Senn, doctor of medicine, Chicago, Ill.; George M. Sternberg, doctor of medicine, Washington, D. C.; J. M. Mathews, doctor of medicine, Louisville, Ky.; W. W. Keen, doctor of medicine, Philadelphia, Pa.; Charles A. L. Reed, doctor of medicine, Cincinnati, Ohio; J. A. Wyeth, doctor of medicine, New York, N. Y.; Frank Billings, doctor of medicine, Chicago, Ill.; J. H. Musser, doctor of medicine, Philadelphia, Pa.; T. J. Happel, doctor of medicine, Trenton, Tenn.; Miles F. Porter, doctor of medicine, Ft. Wayne, Ind.; E. E. Montgomery, doctor of medicine, Philadelphia, Pa.; W. W. Grant, doctor of medicine, Denver, Colo.; H. L. E. Johnson, doctor of medicine, Washington, D. C.; A. L. Wright, doctor of medicine, Carroll, Iowa; William H. Welch, doctor of medicine, Baltimore, Md.; M. L. Harris, doctor of medicine, Chicago, Ill.; Philip Marvel, doctor of medicine, Atlantic City, N. J., and Lewis S. McMurtry, doctor of medicine, Louisville, Ky., and their successors, and those who may be associated with them, are hereby made and constituted a body politic and corporate by the name American Medical Association, with perpetual succession and power to take, for the purposes of its incorporation, by devise, bequest, grant, gift, purchase or otherwise, and hold or convey, both real and personal property and transact business anywhere within the United States. SEC. 2. That the object and purpose of such corporation shall be to promote the science and art of medicine and the public health throughout the United States. SEC. 3. That such corporation shall have power to make by-laws, rules and regulations, and choose officers for its government and the attainment of its purposes.

CANADA.

The Thunder Bay Medical Association was recently formed at Port Arthur, Ontario. The president is Dr. George W. Brown, Port Arthur; vice-president, Dr. W. W. Birdsall; secretary, Dr. H. E. Paul; treasurer, Dr. J. M. McGrady.

Fire in Royal Victoria Hospital, Montreal, January 14, did $40,000 damage. There were no fatalities. Lord Strathcona has cabled from London that he will bear the total cost of rebuilding the damaged portion. The number of patients admitted to the wards of this institution numbered during November 245; 229 were discharged and 11 died. In the outdoor departments there were 2,088 cases.

FOREIGN.

The Garcia Centennial.—The famous singing master, Manuel Garcia of London, who invented the laryngoscope fifty years ago, will be 100 years old March 17, 1905. The London Laryngological Society is collecting subscriptions for a present to be given to the venerable patriarch on that occasion.

German Congress for Amelioration of the Condition of Wage Earners.—The principal subject for discussion will be the protection of the workingman against industrial poisoning by enlightening him in regard to its dangers. The discussion will be opened with an address by L. Lewin. The congress will convene at Hagen June 6, 1905, and a number of the most prominent hygienists and medical authorities, as well as representatives of various industries, are actively engaged in its inception and promotion.

Plague in India.—The *Public Health Reports* state that with the advance of the cold weather, plague is again growing worse in Upper India. For the week ending December 3 the United Provinces had 4,425 deaths, an increase of 1,000 on the total of the previous week; the Punjaub, 2,446, an increase of 400; Mysore, 1,157, an increase of nearly 600; Hyderabad State, 768, an increase of 200. In the Bombay Presidency there were 6,770 deaths, an increase of 300. Elsewhere throughout India the disease remains about as before.

Fifth International Congress of Obstetrics and Gynecology.—The committee in charge of this congress has selected the following subjects for discussion: 1, Accouchement Forcé; 2, Operative Treatment of Fibromyomata of the Uterus; 3, The Vaginal Route in Obstetrics and Gynecology; 4, Critical Judgment of Operative Interventions in Case of Retrodisplacements of the Uterus, and 5, Chorio-epithelioma. The congress is expected to meet at St. Petersburg, Sept. 11-18, 1905. The chairman of the committee on organization is Prof. D. von Ott, Wassily-Ostow, University line 3, St. Petersburg. The committee has sent out a cordial appeal to all interested in obstetrics and gynecology to aid in making this congress a successful and memorable one.

Cure of Trachoma with Radium.—Herman Cohn, the well-known ophthalmologist of Breslau, writes to the *Berliner klin. Wochenschrift* of January 2 to report the rapid disappearance of the granulations in 3 cases of trachoma treated by exposure to radium. He used 1 mg. of radium bromid in a glass tube, 3 cm. long by 2 mm. in diameter, with daily exposures of ten to fifteen minutes. The granulations had been treated before with various measures by himself and others, without effect, while they were rapidly and painlessly banished by the radium, without a perceptible trace of any injurious consequences for the lid or the sight. These results confirm those obtained by R. Pardo of Turin in 2 cases of this hitherto intractable affection. His report was mentioned in THE JOURNAL of Sept. 17, 1904, page 850.

Ophthalmologist's Seal from Ancient Roman Colony.—Professor Ghirardini exhibited at a recent meeting of a Padua scientific society a seal which had been discovered in an ancient tomb at Este, the old Roman colony of Ateste. It is a fourfold seal, being square, with a different inscription on each side, signed with the name of the owner, Eseagato, a physician of Greek origin. Each one of the inscriptions is the formula for some specific for eye affections. Two are for conjunctivitis and one for affections of the eye in general. The inscription was designed to be stamped on the collyrium made according to the directions of the formula, shaped, dried and hardened. Two fragments of these collyrium sticks were found with the seal, still bearing the imprint of the stamp and accompanied by some surgical instruments.

German Congress for Internal Medicine.—The twenty-second German Congress for Internal Medicine will convene at Wiesbaden, April 12-15, 1905. Professor Erb of Heidelberg will preside. The first day will be devoted to a discussion of "Heredity," with addresses by Ziegler of Jena on "The Present Status of the Question of Hereditary Transmission in Biology," and by Martius of Rostock on "The Importance of Heredity, Especially in Pathology and in Tuberculosis." Several communications have been announced on the treatment of leukemia with the Röntgen rays; by Schütz of Wiesbaden on "The Mucous Secretion of the Intestines;" by Matthes of Jena on "Autolysis," and by Clemm of Darmstadt on "Adhesive Plaster Supports in Treatment of Abdominal Viscera." Dr. E. Pfeiffer of Wiesbaden, Parkstr. 13, is secretary of the congress, which will be accompanied by an exhibition of instruments and appliances of interest to internal medicine.

New Poisons Law Wanted in New South Wales.—The Pharmacy Board of New South Wales has asked the government to provide a new poisons law. The old poisons act is now about 30 years old, and is said to be utterly inadequate for the requirements of the community. It does not prevent any person giving poisons away. Abortifacients may be given free of charge. Any person may sell any poison he likes, stating that he deals wholesale, and the law may not interfere, because the old law exempts wholesale dealing without stating what that shall mean. The *Australasian Medical Gazette* states that the proposed new act provides that no person shall be allowed to sell or give or supply poison of any kind unless he is licensed to do so. Ample provision has been made to issue licenses to dealers in poisons necessary for pastoral, agricultural and industrial purposes. A small fee has been provided to enable the board to carry out the provisions of the act. All licenses are to be renewed annually.

Successful Radiotherapy.—Lassar of Berlin presented an array of patients cured of cancer by modern methods of treatment which aroused great interest at the meeting of the German Cancer Research Committee on December 13. He exhibited a number of patients who had been cured for years of small, recent cutaneous cancer by arsenic internally. He says that this has never failed him under such conditions during twelve years' experience with it. He then marshaled 4 patients completely cured by Röntgen or radium treatment, some of them for years. Large cancroids vanish without exception under the *x*-rays, even those of long standing. Smaller ones, especially such growths on the lips, subside permanently under radium. He demonstrated a number of inoculation cancers which had been invariably cured. He also exhibited a number of patients cured of mycosis fungoides and fibrolipoma

by the same measures, and also a large number of patients with sarcoma recurring after treatment by various other measures, the lack of permanent cure in these cases contrasting forcibly with the permanence of the results obtained with radiotherapy. A recent article by Lassar on the subject was reviewed in these columns on page 79. Béclère has been studying the radium rays in Curie's laboratory and announces a number of interesting points which he has learned in respect to dosage, etc. A report of his communication first comes to hand in the *Bull. Soc. Med. des Hop.*, December 22, No. 38. He finds the chromoradiometer a convenient means of determining the activity of radium, although the cutaneous reaction differs materially from that observed with the same dosage of Röntgen rays. He distinguishes between the true reaction, which sometimes does not appear until several weeks after the exposure, and the prereaction. He calls attention to the advantages of applying radioactive substances spread out in a thin, even layer between a square sheet of aluminum and one of platinum pivoting on a handle. By using a rectangular box of this kind it is possible to apply the rays evenly over a surface, none of the exposures overlapping or leaving gaps between them. He styles the radium salts "the pocket edition of the Röntgen tube," adding that they represent at the same time an extremely small and an extraordinarily soft tube. They are indicated chiefly for lesions of no great extent, either on the surface or in the depths, located at points difficult of access to the Röntgen rays. Danlos is convinced that the lack of penetration noted is due to the minute amounts of the radium salts employed. He has obtained effects on the screen through a silver dollar (five-franc piece), through a book with 1,000 pages, through a plank more than 2 cm. thick, and through his hand.

LONDON LETTER.

False Imprisonment (of Lepers) on a Large Scale.

Under the title of "False Imprisonment on a Large Scale," Mr. Jonathan Hutchinson protests in the *Times* against the detention of the lepers of Cape Colony in Robben Island, a rock-bound, sandy and treeless island near Capetown, as a blunder of pseudo-science and of a too credulous legislative authority. He compares this case with that of Mr. Beck, whose false imprisonment twice on a charge for which he has been shown to be innocent has created a great sensation in this country. It may be remembered that in his recent journey for the investigation of leprosy in South Africa Mr. Hutchinson visited Robben Island. Speaking from observation he says that the suffering which the lepers undergo in consequence of their detention is enough to make them wish for death. They sink into a condition of dull, hopeless apathy which knows no relief. Once a prisoner on the island a person is there for life. The leprosy law of Cape Colony consigns to that prison every one, without regard to sex, age or social position, who shows symptoms of leprosy in any stage or form. Release is only possible under a medical certificate of absolute cure. Until the last few years such certificates have scarcely ever been given and they are still very infrequent. Mr. Hutchinson points out that the creed that leprosy is contagious, which is held to justify this compulsory isolation, is with a certain definite exception refuted by a thousand facts. This exception is what he calls "commensal contagion"—taking food from a leper who has sores on the hands—a contingency which can easily be avoided.

Epidemic and Epizootic Plague.

An official report on plague by Dr. William Hunter, government bacteriologist in Hongkong, argues that the current views as to the etiology and pathology of the disease are erroneous. It is believed that the bacillus appears in the peripheral blood a few days before the fatal termination, that the bubonic is the typical variety of plague, that the bubo is an early manifestation of infection, and that gastrointestinal symptoms are of secondary importance. These views, it is urged, must be modified or discarded. The bacillus has been shown by Mr. J. Bell of the Government Civil Hospital, Hongkong, to be present in the peripheral blood from the initial stage of the disease. The application to plague of Ross' method of examining the blood in malaria shows that during the first or second day the bacillus can be found in numbers in the peripheral blood, in fact, before the bubo develops. This observation is confirmed by Dr. Hunter. This is opposed to the prevalent view that the bubo is an early if not an initial manifestation and an effort of the gland to arrest the bacillus. According to Dr. Hunter, plague is primarily a septicemia and the assumption of the bubonic, pneumonic or septicemic form is a secondary matter. Mr. Bell has found that by examination of the blood plague can be as easily diagnosed as malaria on the first or second day. The channel by which plague is conveyed to the human body, according to Dr. Hunter, is the gastrointestinal tract, and his evidence is very strong. If cases were seen at the earliest stage, before feverish symptoms have developed, in the vast majority diarrhea and vomiting would be noticed. Dr. Hunter also contends that pneumonic plague may be primary, i. e., that the bacillus may be inhaled. The importance of infection by the alimentary canal is great, for almost all domestic animals contract plague, birds are subject to it and, as proved by Dr. Hunter, flies, cockroaches and other non-suctorial insects harbor plague bacilli both on and within their bodies, rendering contamination of food easy. Dr. Hunter finds that epizootic plague always precedes epidemic plague, that the time between the initial cases of plague in the rat and in man is from 10 to 14 days, and that the disappearance of epizootic is followed in a week or two by the subsidence of the epidemic. Writing on the "Bridging of Epidemics," Dr. Hunter shows that plague in rats is present throughout the whole year, but that the disease becomes widespread at certain times of the year; in Hongkong during the first quarter of the year, and within a week or fortnight it becomes almost epidemic. Throughout the epizootic period the type of plague among rats is acute, but subsequent to the epizootic and epidemic periods and between the epidemics plague in rats occurs only in a chronic form. This explains the obstinate clinging of the disease to particular areas and its periodical recrudescence. About 75 per cent. of the rats caught alive are infected with chronic plague and the recrudescence of plague in rats in an acute form appears to depend on the infection of fresh generations of rats, the young animals being highly susceptible. Human plague is epidemic only during acute exacerbations of the epizootic and disappears or diminishes while chronic plague is present among rats.

Preservatives in Milk.

An important report on this subject has been presented to the Essex County Council by Mr. Dymond, lecturer on chemistry, Dr. Dyer, district agricultural analyst and joint public analyst, and Dr. Thresh, county health officer. The points considered by them were the effect of wet and dry weather on milk and the use of preservatives in dairy produce. With regard to the first question, they examined over 1,000 specimens and found that, although the richness of milk showed considerable variations, the average results were much above the limits of the Board of Agriculture and that there was no evidence that very dry weather or very wet weather produced any influence such as to render the board's limits unfair or onerous to the farmer. They were unanimous that it was to the interests of the farmer, as well as the consumer, that the board's regulations should be uniformly enforced. The use of preservatives was found to be unnecessary under the conditions of modern dairying with proper cooling appliances and due regard to cleanliness. The practice was further condemned as objectionable where infants are concerned. All the experts were of opinion that the use of preservatives in milk, including boracic acid and formalin, should be prohibited and that the quantities admissible in other dairy products should not exceed those permitted in the recommendations of the departmental committee.

Reformatories for Inebriates.

Dr. Branthwaite, inspector under the "inebriates act," has issued an instructive report for 1903 on the inmates of the reformatories provided under the act. The numbers have greatly increased in recent years as the working of the system is becoming appreciated. The number under detention at the end of 1903 was 1,012, against 88 five years before. Among these habitual drunkards there is a remarkable absence of the disease due to alcoholism. There has been one clear case of chronic Bright's disease. Many were suffering from symptoms of hepatic congestion, enlargement of the liver, slightly jaundiced conjunctiva and habitual constipation. But the symptoms disappeared under treatment. There was not one typical case of cirrhosis of the liver among these 1,000 worst drunkards in the country and no instance of ascites. Their mental condition was not so satisfactory. The majority were "feeble-minded," not amenable to jurisdiction as lunatics, but to a certain degree irresponsible. It would be difficult to find more than a third capable of passing muster as quite sane as compared with persons of average mental capacity.

Ice and Cold Storage.

The London County Council has issued a report on the fit-

ness for consumption of ice sold in this country and conditions under which the cold storage business is conducted. Most of the ice used in London comes from small lakes and ponds in Norway, which are said to be situated in such secluded sites as to render contamination highly improbable. But it is by no means certain that the sanitary conditions at the harvesting grounds or the means of transfer and storage are satisfactory from the hygienic standpoint. The council, therefore, recommends that ice required for consumption or brought into contact with food should be that made artificially from pure and preferably from distilled water.

Correspondence.

Medical Society for the Study of Alcohol and Narcotics.

HARTFORD, CONN., Jan. 9, 1905.

To the Editor:—The American Medical Society for the Study of Alcohol and Narcotics will hold its annual meeting at Portland, Oregon, July 12, 1905. This society is composed of members of the American Medical Association who are especially interested in the study of the alcoholic problem and the diseases which follow. The purpose of the society is to study medically the clinical, etiologic, therapeutic and medico-legal aspects of this subject. Every year the increasing prominence of the diseases and the injuries due directly to alcohol make it more and more imperative for medical men to become familiar with the general principles of these neuroses and to be able to advise wisely the best means of prevention and cure. This society is trying to build up a new and broader interest in the subject among physicians to enable them to become teachers rather than followers of the public opinion of to-day. Several excellent papers have been promised for this annual meeting, and an earnest appeal is made to all medical men to take up this subject from a scientific point of view and to assist by their contributions or presence at the coming meeting. T. D. CROTHERS, M.D., Secretary.

Preparation of the Parturient Patient

FORT STANTON, N. M., Jan. 9, 1905.

To the Editor:—Why is it that the great majority of obstetricians are so neglectful of surgical cleanliness as applied to the external genitals of women in labor? The gynecologist shaves and scrubs the external genitals for every minor operation, and the surgeon does the same even when his field is in the abdomen six inches from the nearest of the pubic hair. But in a disgracefully large proportion of all deliveries no attempt whatever is made by the obstetrician to clean his field of operation, with the result of thousands of unnecessary deaths every year and an incalculable amount of chronic invalidism and sterility.

Location, anatomic conformation and functions of the vulva all combine to favor the accumulation there of a large and varied assortment of putrescible materials and pathogenic bacteria. Yet many an obstetrician allows his sterilized hand to come in contact with it at frequent intervals during labor, and so rubs bacteria into the stretching and splitting cervix. The full bath before labor is, of course, of some effect in reducing the possibilities of infection; but those familiar with surgical asepsis know that nothing but orthodox shaving and scrubbing can be relied on to prevent contamination of the birth canal during the examinations. It is not proposed to attempt to clean the vagina in ordinary cases. Theory and experience both show that the vagina can take good care of itself.

The passing of the finger through a septic vulva during labor is responsible for thousands of deaths and tens of thousands of cases of prolonged ill-health. That this state of affairs is still tolerated in obstetrics while it no longer is in surgery is due to a number of causes, not one of which is a real justification. In the first place surgery is practically a new art by reason of the revolutionary changes resulting from anesthesia and antisepsis; hence, patients expect surgeons to do things incomprehensible to the lay mind. But obstetrics, as many practice it, has changed little or none in the last fifty years. Every old woman considers herself a competent critic in the art, and frowns on all innovations, especially on those she can not understand or that make for her extra work. Thus, in contrast to the surgeon, whose patients come to him in a state of absolute helplessness, the obstetrician is often the most henpecked creature alive.

Fifty years ago the profession took a long step toward eradicating sepsis as a noteworthy cause of death after labor, and ever since has balked at the second and final one. Thanks to Holmes and Semmelweis, we no longer go from autopsies to deliveries without washing our hands. To remove the other constant source of infection, and so still further to reduce the mortality, it is necessary to scrub and to shave the vulva before labor, as the gynecologists do before an operation.

But it is easy to scrub one's own hands, while it requires more than ordinary tact and courage to succeed in inducing a frightened woman to submit to a disagreeable procedure which all her female friends assure her is unnecessary. Only by gradually and persistently educating the public and by arousing the conscience of the profession can this important reform be carried out. It is hoped that another Holmes with an inspired pen and another Semmelweis with an array of convincing statistics will come forward to do the work of awakening. In the meantime the rank and file of the profession will slumber on in the comfortable delusion that hand-scrubbing is the alpha and omega of obstetric asepsis and that the thousands of deaths and tens of thousands of cases of chronic invalidism from sepsis every year are an "irreducible minimum" and a necessary part of the curse of Eve.

NORMAN ROBERTS.

Queries and Minor Notes.

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish his name will be faithfully observed.

ALBUMINURIA.

BATH, ME., Jan. 2, 1905.

To the Editor:—In your answer, Dec. 31, 1904, to my query concerning the Spiegler-Jolles reaction, you say to filter the urine through asbestos. Do you mean asbestos paper? What is the character of this asbestos, and where can it be obtained?

HORACE FOX.

ANSWER.—Asbestos fiber comes in masses like cotton and should be readily obtained of any dealer in chemical supplies. The long fibers are best. Place a small, perforated porcelain disc in a funnel; suspend the asbestos in water and pour on the suspension until an even layer of asbestos is formed on the disc. The layer should be thick enough to yield a clear filtrate.

INJECTION TREATMENT OF HERNIA.

———, MINN., Jan. 4, 1905.

To the Editor:—Kindly give me the titles of about two good articles on the injection method for cure of inguinal hernia. Is this method used to any extent by reputable physicians?

MINNESOTA.

ANSWER.—Feld: "Treatment of Hernia by Injection," *Cincinnati Lancet-Clinic*, 1897, n. s., vol. xxxix, p, 182, Griffen: "Treatment of Inguinal Hernia by Injection," *International Journal of Surgery*, N. Y., 1897, vol. x, p. 355. Guim: "Injection Treatment of Hernia," *Texas Medical Journal*, 1900, vol. xvi, p. 71. These three are comparatively recent articles in English. A more elaborate article in German, "Treatment of Hernia with Alcohol Injections," by Steffen, may be found in *Samml. klin. Vortrage*, n. f., 1904, No. 369. The results of the injection treatment are so poor when compared with those of the modern operative procedures that the injection method finds little to recommend it.

SEQUELS OF GONORRHEA.

BROOKLYN, N. Y., Jan. 11, 1905.

To the Editor —IN THE JOURNAL January 7, page 51, under the above heading, you answer the query in a way that gives an erroneous idea of the capabilities of the disease, inasmuch as you fail to mention any other than the acute—local—after-effects, and make no mention of the general life-long constitutional after-effects that most frequently result. These last are usually overlooked in the "years after," the physician usually ascribing same to other causes, when a careful study of the life history of a

series of such cases would force a careful observer, if put on the right track, to conclude that gonorrhea is a constitutional disease with secondary and tertiary as well as hereditary manifestations, and that it is a frequent etiologic factor in a large percentage of chronic conditions. Some few of the chronic after-effects that may be most frequently noted are the following: Chronic catarrhal states, nasal, bronchial, gastrointestinal, and genitourinary; chronic rheumatic and neuralgic tendencies and states; morbid mental conditions of all kinds and degrees; passive congestions due to sluggishness of the venous system and producing first catarrhal states, to be followed secondarily by hyperplasia, and still later by fibrosis of structures involved; tendency to new growths both benign and malignant—anything from warts to cancer; marasmus and gastrointestinal diseases of infants, most frequently seen in the offspring of a gonorrheal parent. Many infants, when old enough to do so, will persist in "lying on face with knees drawn up under belly," and in every such case you may be positive that one of the ancestors has had gonorrhea.

W. H. FREEMAN.

ANSWER.—Our correspondent does well to realize as fully as he does the immense and protracted evil consequences of gonorrheal infection. He is not correct, however, in stating that we failed "to mention any other than the acute—local—after-effects." We mentioned several that are either not local or not acute. We purposely confined our answer to "the diseases and conditions usually included" because that was the question asked.

Marriages.

JOHN W. CARICO, M.D., to Miss Effie Hill, both of Cloverdale, Cal., December 30.

ASA N. DE VAULT, M.D., to Miss Mary Anderson, both of Chicago, December 21.

GUY A. GRAFTON, M.D., Hayward, Wis., to Miss Josephine Heyer of Superior, Wis.

MAURICE PACKARD, M.D., to Miss Blanche Vogel, both of New York City, January 1.

EUGENE F. HOLLAND, M.D., to Miss Pearl Ingram, both of Mulberry, Tenn., January 4.

EUGENE H. SMITH, M.D., Ogden, Utah, to Miss Edith Burns of Omaha, Neb., January 4.

WALTER M. ELY, M.D., to Miss Nora Ingle, both of Walla Walla, Wash., December 31.

D. D. TALCOTT, M.D., Crofton, Neb., to Miss Ethel Milner of Belvidere, Ill., December 27.

EDWARD C. LEDMAN, M.D., to Miss Zella N. Buchanan, both of Norwich, Ohio, December 28.

J. MAGGARD, M.D., Wichita, Kan., to Miss Erna Barteldes of Lawrence, Kan., December 31.

JOSEPH R. ANDERSON, M.D., to Miss Georgia Lewis, both of Owensboro, Ky., December 27.

LEE WALLACE DEAN, M.D., to Miss Ella M. Bailey, both of Iowa City, Iowa, December 29.

ROLAND H. SHIPPEY, M.D., Rock, Kan., to Miss Angie Cecilia Gray of Denver, Colo., December 28.

ARVILLE W. BITTING, M.D., Lafayette, Ind., to Miss Katherine Eliza Golden of Wollaston, Mass.

ROBERT W. O'DONNELL, M.D., Monroe, La., to Miss Amelia Hardel of New Orleans, January 4.

ALFRED R. SEEBASS, M.D., to Miss Herta Thies, both of Denver, at Cheyenne, Wyo., December 19.

L. ROLLIN HUDELSON, M.D., Milroy, Ind., to Miss Maude Ellis of New Castle, Ind., January 4.

EDWARD JENNER BARRETT, M.D., Chicago, to Miss Julia Dennett of Sheboygan, Wis., January 11.

CAPT. THOMAS HENRY MATHEWS CLARKE, R.A.M.C., to Miss Susan Morrell Chapin of Pennsylvania.

LYNN MOORE BARNES, M.D., to Miss Donna Ullery Buckingham, both of Decatur, Ill., January 10.

THOMAS M. MERIWETHER, M.D., Elberton, Ga., to Miss Nita Kendrick of Dawson, Ga., December 29.

HARRY S. PRENTISS, M.D., De Soto, Mo., to Miss Edith Garsides of Little Rock, Ark., December 27.

W. V. STANFIELD, M.D., West Point, Ind., to Miss Edith Closson of Newtown, Ind., December 28.

CHARLES F. MCCOMB, M.D., to Miss Helen Jensen, both of Duluth, at Stillwater, Minn., January 17.

HOMER SYLVESTER, M.D., Milwaukee, Wis., to Miss Janette Atwood, at Edgerton, Wis., December 21.

E. VAN CAMP, M.D., Butler, Mich., to Miss Bessie May Gates of Red Wing, Minn., December 29.

CHARLES BERNSTEIN, M.D., Rome, N. Y., to Miss Lillian Watson Stebbins of Warsaw, N. Y., January 3.

GEORGE B. M. BOWER, M.D., Fort Wayne, Ind., to Miss Lillie Weld of Guthrie Center, Iowa, December 26.

THOMAS A. BUCHANAN, M.D., Oklahoma City, Okla., to Miss Winifred Brown of Virginia, Ill., January 3.

CLYDE VAN OSDOL, M.D., Milan, Ind., to FLORENCE M. OLMSTEAD, M.D., of Versailles, Ind., December 29.

LOUIS FULDNER, M.D., Milwaukee, to Miss Carolyn Elizabeth Blanchard of Lake Geneva, Wis., December 28.

JOHN RANDOLPH JORDAN, M.D., Ellaville, Ga., to Miss Elizabeth Williams of Buena Vista, Ga., December 31.

EDWARD THOMAS LAWLER, M.D., Cedar Rapids, Iowa, to Miss Laura Mae Green of West Union, Iowa, January 17.

CHRISTIAN WALDKOENIG, M.D., Baltimore, Md., to Miss Florence Aurora Mills of Douglasville, Ga., December 29.

WILLIAM CHARLES SCHROEDER, M.D., Portsmouth, Va., to Miss Margaret V. Hill of Raleigh, N. C., December 29.

WILLIAM WALLACE RALSTON, M.D., Houston, Texas, to Miss Ella Kate McCollum of Lockport, N. Y., December 28.

LEANDER ARMISTEAD RILEY, M.D., Oklahoma City, Okla., to Miss Gertrude Darrall of Galveston, Texas, January 11.

JOSEPH B. HARDY, M.D., St. Louis, Mo., to Miss Minnie B. Withers of Topeka, Kan., in Kansas City, Mo., January 3.

Deaths.

Churchill Carmalt, M.D. College of Physicians and Surgeons in the City of New York, 1891, a member of the American Medical Association, New York State Medical Association, Association of American Anatomists, and New York Academy of Medicine; assistant surgeon at the Woman's Hospital; one of the founders of the Hudson Street Hospital; demonstrator of anatomy in the College of Physicians and Surgeons; formerly assistant to the late Dr. T. Gaillard Thomas; a gynecologist of repute, died at his home in New York City, January 8, from pneumonia, after an illness of three days, aged 39.

William H. Prioleau, M.D. Medical College of the State of South Carolina, Charleston, 1893, a member of the American Medical Association; formerly acting assistant surgeon in the United States Public Health and Marine-Hospital Service; a member of the Mississippi Valley Medical Association, Medical Society of the State of North Carolina, and Duncombe County Medical Society, formerly of Asheville, N. C., died at his home in Charleston, S. C., January 4, after a long illness, aged 35.

James Walter Hervey, M.D. Indiana Central Medical College, Indianapolis, 1850, surgeon of the Fiftieth Indiana Volunteer Infantry in the Civil War; one of the oldest members of the Indiana State and Marion County medical societies; a member of the legislature in 1854; delegate to the International Medical Congress in 1892, died at his home in Indianapolis, January 5, from a severe cold, after an illness of three days, aged 85.

Henry Mallory, M.D. Medical Department of Western Reserve University, Cleveland, 1850, president of the Board of Health of Hamilton, Ohio, and one of the oldest practicing physicians in the state, died at his home, December 21, from pneumonia, after an illness of two days, aged 82. He served as surgeon to the Fourth Kentucky Infantry and afterward as division surgeon during the Civil War.

Warren Hunter, M.D. Medical School of Maine at Bowdoin College, Brunswick, 1860, physician of Rock Island County for six years, assistant surgeon of the One Hundred and Sixteenth Maine Volunteer Infantry during the Civil War, died at his home in Oneida, Ill., January 6, from uremia, aged 72.

Joanis Orlando Harris, M.D. Geneva (N. Y.) Medical College, 1851, assistant surgeon of the Fifty-third and One Hundred and Thirty-eighth Illinois Volunteer Infantry in the Civil War, died at his home in Ottawa, Ill., January 10, from pneumonia, after an illness of only one day, aged 76.

George V. Convery, M.D. Long Island College Hospital, Brooklyn, N. Y., 1880, for many years surgeon in the merchant marine and later inspector of the Brooklyn Department of

Health, died at his home in South Brooklyn, N. Y., January 7, after an illness of four months, aged 44.

Richard Kidder Taylor, M.D. Medical College of Virginia, Richmond, 1846, medical purveyor in the Confederate service during the Civil War, died at his home in Keokuk, Iowa, January 6, from heart disease, after an illness of two months, aged 78.

D. Albert Barnum, M.D. Albany (N. Y.) Medical College, 1865, assistant surgeon in the Sixteenth New York Heavy Artillery during the Civil War, died at his home in Cassville, N. Y., from gastritis, January 1, after an illness of a few hours, aged 59.

Frank Chambers, M.D. University of Louisville Medical Department, 1875, a member of the American Medical Association and one of the best-known physicians of Hancock County, Ky., died at his country home near Chambers, January 5, from dropsy.

Harry D. Quarry, M.D. Trinity Medical College, Toronto, Ont., 1889, some-time secretary of the North Dakota State Board of Health, a specialist on the eye and ear, died at Mentone, Cal., December 27, from tuberculosis, after a long illness.

William A. Norred, M.D. College of Medicine and Surgery of the University of Minnesota, Minneapolis, 1902, committed suicide in his rooms in Minneapolis, January 12, by shooting himself through the heart while despondent, aged 34.

E. B. Freeman, M.D. Jefferson Medical College, Philadelphia, surgeon in the Confederate service during the Civil War, died at his home in East Rome, Ga., January 6, from the effects of carbolic acid accidentally administered, aged 74.

Edmund C. Purcell, M.D. Missouri Medical College, St. Louis, 1887, a member of the American Medical Association, died at his home in Elyria, Denver, Colo., from pneumonia, after a short illness, January 3, aged 49.

Frank L. Connerly, M.D. Tulane University of Louisiana Medical Department, New Orleans, 1894, of Lake Village, Ark., was accidentally shot and killed while hunting near McGehee, Ark., December 20, aged 48.

Carl V. Scheuermann, M.D. Western Pennsylvania Medical College, Pittsburg, 1894, clergyman and physician, died at his home in Pittsburg, January 4, from pneumonia, after an illness of five days, aged 42.

John Hill, M.D., assistant surgeon of the Forty-first Ohio Volunteer Infantry in the Civil War, died at Vincennes, Ind., December 27, from cerebral hemorrhage, after an illness of two months, aged 62.

Noble C. McMorris, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1856, died at his home in Duncannon, Pa., December 27, from pneumonia, after a short illness, aged 68.

George P. Dobson, M.D., one of the oldest practitioners of Dickson County, Tenn., died at his home in White Bluff, December 31, from paralysis, after an illness of three days, aged 70.

James Edward Kempf, M.D. University of Louisville Medical Department, 1878, of Jasper, Ind., died at St. Anthony's Hospital, Louisville, January 8, after on operation for appendicitis, aged 48.

Achille Chouinard, M.D. Laval University Medical Department, Quebec, 1902, recently returned from studying in France, died at his father's home in Quebec, October 11, from tuberculosis.

Alfred Tygesson, M.D. University of Lund, Sweden, 1891, a morphin habitué, committed suicide at his home in Hartford, Conn., January 6, by taking 25 grains of morphin, aged 48.

Roosevelt H. Davis, M.D. University of Michigan Department of Medicine and Surgery, Ann Arbor, 1852, died at his home in Eaton Rapids, Mich., January 7, aged about 80.

Charles A. McNulty, M.D. The College of Physicians and Surgeons of Chicago, 1887, committed suicide by shooting himself in his room at Harlem, Mont., Oct. 6, 1904.

John Reynolds Pomeroy, M.D. Toronto University Medical Faculty, 1878, died at his home in St. Louis, December 30, from septicemia following mastoid abscess, aged 55.

Joseph L. Hillmantel, M.D. Northwestern University Medical School, Chicago, 1887, formerly of Milwaukee, but more recently of Missoula, Mont., died December 21.

William de la Fletcher Ward, M.D. San Francisco, 1894, died from ptomain poisoning at his home in Santa Rosa, Cal., January 6, after an illness of two days, aged 53.

James W. Agee, M.D. St. Louis Medical College, for forty years a practitioner of Valley, Neb., died at his home in that place from pneumonia, January 8, aged 71.

Cyrus McCormick, M.D. University of Maryland School of Medicine, Baltimore, 1868, died at his home in Berryville, Va., January 3, after a long illness, aged 59.

Charles W. Goodale, M.D. Rush Medical College, Chicago, 1869, died at his home in Metz, Ind., from kidney disease, after a long illness, January 5, aged 60.

Jennie Brooks Hildebrand, M.D. Woman's Medical College of Pennsylvania, Philadelphia, 1870, died from pneumonia at her home in San Francisco, January 7.

David S. Minton, M.D. New York University, New York City, 1878, died at his home in New York City, January 2, from cerebral hemorrhage, aged 65.

W. P. Hough, M.D. Tulane University of Louisiana, New Orleans, 1883, of Columbia, La., died in Monroe, La., January 3, after an illness of several months.

William C. Cox, M.D. Cincinnati, 1848, died at his home in East Nashville, Tenn., January 6, from senile debility, after an illness of seven months, aged 88.

Peter Reid McMonagle, M.D. University of Vermont Medical Department, Burlington, 1859, died at his home in Prescott, Ont., December 20, aged 71.

George H. Cagle, M.D. St. Louis Medical College, 1875, of Mandeville, Ark., was shot and killed while hunting near Texarkana, January 8, aged 60.

Peter J. McCormick, M.D. New York University, New York City, 1858, died at his home in Yazoo City, Miss., January 3, from cerebral hemorrhage.

Henry Martyn Wells, M.D., medical director United States Navy from 1861 to 1897, died at his home in New York City, January 12, aged 70.

Andrew J. Brewer, M.D. University of Louisville Medical Department, 1879, of Muskogee, I. T., died December 30, at San Diego, Cal., aged 58.

George W. Gillette, M.D. University of Buffalo (N. Y.) 1888, died suddenly at his home in Buffalo from heart disease, December 17, aged 55.

Samuel B. Shaw, M.D. Beaumont Hospital Medical College, St. Louis, 1901, of Bowesmont, N. D., died recently in a hospital in Minnesota.

James J. Kerr, M.D. Cincinnati, 1878, died at his home in Cincinnati, Iowa, December 29, after an illness of several months, aged 84.

Jerome H. Hardcastle, M.D. Medical College of Virginia, Richmond, 1865, died at his home in Middletown, Del., December 31, aged 64.

M. W. Coffman, M.D. Colorado School of Medicine, Boulder, 1900, of Boulder, Colo., died in Denver from tuberculosis, June 9, 1904.

Hugh L. Ray, M.D. Years of Practice, Kentucky, 1894, of Vaughan's Mills, Ky., died suddenly in Bellevue, Ky., January 10, aged 68.

Axel M. Anderson, M.D. Cincinnati, 1899, of Erie, Pa., died recently in Chicago, and was buried in Jamestown, N. Y., December 28.

Monroe Wilkinson, M.D., formerly of New Haven, Ky., died at his home in Louisville, Ky., December 31, from pneumonia, aged 67.

J. L. Vowell, M.D. Missouri Medical College, St. Louis, 1878, formerly of Sunset, Texas, died at Bowie, Texas, December 28, aged 70.

James D. Landrum, Years of Practice, Kentucky, 1894, died at his home in Mayfield, Ky., January 9, from senile debility, aged 82.

Isaac Nock, M.D. Pennsylvania, 1867, died at the Canton (Ohio) County Infirmary, December 27, from pneumonia, aged 77.

James I. Ferron, M.D. Keokuk (Iowa) Medical College, died at his home in Council Bluffs, Iowa, December 28, from pneumonia.

William Harper Davis, M.D. New York City, 1896, died at his home in Brooklyn, January 8, after a long illness, aged 33.

John Lucas Meriwether, M.D., of Mathews Station, Ala., died at a private sanitarium in Atlanta, Ga., January 2, aged 55.

W. D. Young, M.D. College of Physicians and Surgeons, Baltimore, 1889, of East Durham, N. C., died Sept. 25, 1904.

John H. Crawford, M.D. St. Louis, 1879, died at his home in Santa Monica, Cal., after a long illness, Nov. 1, 1904.

John Greenbank, M.D. Pennsylvania, 1853, died at his home in Ocean Grove, N. J., December 29, aged 75.

R. Frank Eagon, M.D. Louisville Medical College, 1889, died at his home in Crawford, W. Va., January 2.

George L. Freeman, M.D. Ohio, 1852, of Glen Head, Long Island, N. Y., died December 27, aged 75.

Joseph A. Moke, M.D. Pennsylvania, 1870, died at his home in Crosswicks, N. J., January 1, aged 65.

William F. Stewart, M.D. Illinois, 1890, of Wabash, Ind., died January 8, in Indianapolis.

Book Notice.

DISEASES OF THE LIVER, GALL BLADDER AND BILE DUCTS. By H. D. Rolleston, A.M., M.D. (Cantab.), F.R.C.P., Physician to St. George's Hospital, London. Fully Illustrated, Including Seven Colored Insert Plates. Cloth. Pp. 794. Price, $6.00 net. Philadelphia, New York, London: W. B. Saunders & Co. 1904.

One is prepared to welcome a good book, especially one in English, on diseases of the liver. Budd, Harley and Murchison are out of date; the more recent work of Quincke and Hoppe-Seyler in Nothnagel's series is not entirely satisfactory. Probably books on this subject are not more numerous because there is still so much that is vague and misty in the physiology, pathology, and pathologic chemistry of the liver, and so much that is unsatisfactory in the matter of treatment. But disease of the liver is a something that is real and that has to be reckoned with by every practitioner, and a reliable guide is a necessity; such a guide will be found in Rolleston's work. The book is eminently practical; it is not overbalanced with theory, in fact we may question whether the author has acted wisely in some instances in omitting certain theories. Rolleston's contributions to the subject of the pathology and clinical course of diseases of the liver during the last decade have been numerous and he is known as a careful observer and a clear writer. These characteristics are seen in this book. A due sense of proportion prevails, not only in the space devoted to different diseases but in that devoted to the subheads under the various diseases. He lets no hobby run away with him; he does not fill pages with the exploiting of some pet notion. The case histories that are inserted, and there are many of them, are truly illustrative, concisely given and never obtrusive. The book is up to date. Such conditions as pericarditic pseudocirrhosis, hemachromatosis, Bante's disease, etc., are fully discussed. The author appreciates the difficulties of satisfactorily classifying the cirrhoses; he states the case fairly, including the modern views, gives various classifications, such as those of Adami and the elaborate one of Chauffard, as well as his own, and then sensibly comes back to the old clinical classification of the portal and biliary types of the disease, not by any means exact, but still workable. It is a pleasure to note the recognition of American and French writers. English writers are, of course, freely cited. We have become so accustomed to see in the bibliographies such a long string of German titles that it is a pleasant surprise, almost a shock, to read a list of ten or fifteen names that includes, perhaps, but one or two German ones. We trust our author has not gone too far in this respect. For while our German confrères are extremely aggravating and shortsighted, too, in the way in which they largely ignore work done elsewhere than in Germany, we do not gain by ignoring them; rather do we injure ourselves.

Miscellany.

The Army Medical Service.—The bill to increase the efficiency of the Medical Department of the United States Army has passed the Senate and is now before the House of Representatives. On January 9 the President of the United States sent the following message to Congress:

To the Senate and House of Representatives:

I have, in a former message, stated to the Congress my belief that our Army need not be large, but that it should in every part be brought to the highest point of efficiency. The Secretary of War has called to my attention the fact that the act approved Feb. 2, 1901, which accomplished so much to promote this result, failed to meet the needs of one staff department, in which all of our people are peculiarly interested and of which they have a right to demand a high degree of excellence. I refer to the Medical Department. Not only does a competent medical service by safeguarding the health of the Army contribute greatly to its power, but it gives to the families of the nation a guaranty that their fathers, brothers and sons who are wounded in battle or sicken in the camp shall have not only skilled medical aid, but also that prompt and well ordered attention to all their wants which can come only by an adequate and trained personnel.

I am satisfied that the Medical Corps is much too small for the needs of the present Army and therefore very much too small for its successful expansion in time of war to meet the needs of an enlarged Army, and, in addition, to furnish the volunteer service a certain number of officers trained in medical administration. A bill which, in the opinion of the Secretary of War, of the late Secretary of War, and of the General Staff of the Army, supplies these deficiencies was introduced at the last session of Congress and is now before you. I am also advised that it meets the cordial approval of the medical profession of the country. It provides an organization which, when compared with that of other nations, does not seem to err on the side of excessive liberality, but which is believed to be sufficient. I earnestly recommend its passage by the present Congress. If the Medical Department is left as it is, no amount of wisdom or efficiency in its administration would prevent a complete breakdown in the event of a serious war.

I transmit herewith a memorandum which has been prepared for me by the Surgeon General of the Army, and also the remarks of the former and of the present Secretary of War with reference to this bill.

It is reported to me that the Ordnance Corps is in a position of disadvantage; that its personnel is inadequate to the performance of the duties with which it is charged, and that under existing conditions it is unable to recruit its numbers with officers of the class necessary for the conduct of its very technical work. It is unnecessary for me to lay stress on the desirability of having the design and manufacture of the material with which we are to fight in competent and sufficient hands, as there is no difference of opinion as to the intention of all concerned to have provided a proper supply of weapons, munitions, engines of war, equal in conception and construction to any in the world, and superior in any respects in which by skill and attention we may be able to compass such superiority.

The greatly increased utilization of the exact sciences in ordnance construction requires a larger personnel for their application, and the process of its selection should be severely and continuously discriminating, under conditions offering stimulus sufficient to cause officers of proper capacity, of whom it appears there are plenty, to wish to subject themselves to it. A bill embodying the necessary provisions and involving no radical departure from existing methods has been prepared by the War Department. I think it should be passed. THEODORE ROOSEVELT.

The following is Surgeon-General O'Reilly's memorandum sent to the President Dec. 7, 1904:

The fact that mortality from disease in armies in war time greatly exceeds that from losses in battle is well known. The noneffective rate from sickness is even more greatly in excess of that from wounds. The British army in the Peninsula, in spite of the many bloody battles, lost three times as many men from disease as from wounds. The infant French Republic was saved at Valmy more by the paralysis of Prussian efficiency by ravage of disease than by that rather bloodless victory. General Scott in the Mexican war lost by disease one-third of his effective strength. The loss from disease in the civil war was more than double that from the casualties of battle. The military efficiency of newly raised armies is specially liable to be gravely compromised or even destroyed from this cause.

The three primary duties of the Medical Department are:

1. To preserve the effective strength of armies (military sanitation).
2. To care for the sick and wounded.
3. To conduct the administrative work of the department.

To carry out these objects requires a highly specialized and complex organization and a numerous trained personnel. Military sanitation is now recognized to be a well-marked specialty in medicine of which the average practitioner knows little more than he does of the methods of military medical administration. The second duty is that for which civilian physicians can be used to advantage, while the first and third must in the main be in the hands of trained medical officers in order to secure efficiency. The standard of what is regarded as a satisfactory degree of efficiency in all of these directions has been greatly raised in late years.

In the Spanish war the country was scandalized by a monthly death rate from disease which rose from 2.15 per thousand in July to 4.08 in August, but fell again to 2.45 in September. During the civil war a higher death rate from disease than the highest maximum above mentioned persisted for many months, reaching in the spring of 1862 a maximum more than double it, without creating half as much popular clamor.

Nor would such occurrences be possible now in civilized warfare as for 600 wounded to lie for more than ten days on the battlefield, as happened after the second battle of Bull Run, on Aug. 30, 1862, when many of the wounded died of starvation. That this was not one of the unavoidable horrors of war, but was, as stated by the Surgeon General in reporting these facts, due to defective medical organization is evidenced by the fact that after the organization of the ambulance service of Letterman such occurrences ceased in the Army of the Potomac. After the great battles of Fredericksburg, Dec. 13, 1862, and Chancellorsville, May 2, 1863, for instance, although the Army was defeated, the field was cleared of wounded without confusion or delay.

The public sentiment of the civilized world therefore demands better organization and higher efficiency for the medical department of armies than at any time heretofore. Other nations, including

even so poor a nation as the Japanese, are willing to pay the cost of increased efficiency in the shape of a large and well organized medical service, and it is not to be believed that Congress or the American people will refuse for our Army what is demonstrated to be essential to avoid future failure and insure efficiency. For medical efficiency a certain number of trained medical officers is necessary to direct matters of military sanitation, and, in the words of Mr. Root, "to conduct the administration of the great and complicated medical service." The measure of this number is given by the Secretary of War in his report for this year as follows (p. 25):

"It is evident that a staff department which has a personnel insufficient to perform the duties required of it in time of peace can not be successfully expanded to meet the increased responsibilities of war. The commissioned personnel of the Medical Department is nearly 200 short of the number required to perform its work at present, and the deficiency has to be made good by the employment of civilian physicians under contract. This is an expensive and unsatisfactory expedient in time of peace, while in time of war it heavily handicaps the efficiency of the department."

This principle was not recognized in the reorganization of the Army in 1901. The increase in the Medical Department at that time was so inadequate that the proportion of medical officers to the Army at large was not increased, but greatly diminished and was made considerably less than the proportion existing at the beginning of the Spanish war or the civil war—this in spite of the recommendation of the Dodge Commission that the regular corps be increased.

Instead of giving an advocate's discussion of the bill now before Congress I prefer to refer the President to the impartial opinion of the experts of the Third Division of the General Staff as given in their report on it made to the Chief of Staff, which is to be found on pages 6, 7 and 8 of the report of the Senate Military Committee. (Report No. 2420.)

The attention of the President is especially asked to the following points:

The Army is to-day officered for a strength of 100,000 men except the medical departments, which is only sufficient for 42,000.

An adequate increase in the Medical Corps was recommended by the Dodge Commission.

This bill offers, in the words of Secretary Taft, "a complete workable system."

With a less number than asked for, the Medical Department can not perform the duties with which it is charged by Army Regulations in time of peace, or be successfully expanded to meet the increased labors and responsibilities of war.

With a less proportion in the higher grades it can not attract properly qualified candidates to fill the vacancies created.

The Reserve Corps constitutes an eligible list of competent civil physicians who will reinforce the regular Medical Corps in time of war or other emergency.

The increase of cost is, when the enlargement is completed four years hence, only a little over 4 per cent. above the present cost of the Medical Corps, while next year it will be actually diminished under this act.

The increase of efficiency is as 320 is to 450, or about 40 per cent.

The bill has received the rigid scrutiny of the General Staff and the approval of Secretary Root, of Secretary Taft, of the Military Committee of the Senate, and of the American Medical Association.

Respectfully submitted, R. M. O'REILLY,
Surgeon General.

Mr. Bassett of New York, in discussing this subject, said that some attention should be given to the life-saving departments of the Army as well as to the life-destroying departments. He stated that in the civil war 80 per cent. of those who died succumbed to preventable disease. In the Spanish-American war, on the American side, thirteen men died from preventable disease for every one who died in battle or from wounds received in battle. He then compared this with the illustration furnished by the Japanese army and quoted Major Seaman, who studied the Japanese methods in the field, as follows:

Too much praise can not be bestowed on the medical departments of the army and navy for their splendid preparatory work in this war. The Japanese are the first to recognize the true value of an army medical corps. Care of the sick and wounded consumes but a small part of the time. The solution of the greater problem, preserving the health and fighting value of the army in the field—by preventing disease, by careful supervision of the smallest details of subsisting, clothing, and sheltering the units—is their first and most important duty. Their capacity for detail is something phenomenal; nothing seems too small to escape their vigilance or too tedious to weary their patience, and everywhere—in the field with the scouts or in the base hospitals at home—the one great prevailing idea is the prevention of disease. The medical officer is omnipresent. You will find him in countless places where in an American or British army he has no place. He is as much at the front as in the rear. He is with the first screen of scouts with his microscope and chemicals, testing and labeling wells so the army to follow shall drink no contaminated water.

Mr. Bassett went on to say that in the American Army not only is the Medical Corps insufficient, but they lack authority. A great many physicians who enter the Army, especially in time of war, are on temporary contract. They are called "contract doctors," and it has been held in a court-martial that they do not have authority, not being commissioned officers, and yet those who are regularly commissioned in the Army are so few in number that they can not do the sanitary work in advance that is done in the Japanese army; they can not do the chemical and biologic work that would save thousands of lives, and the result is that preventable diseases have wiped out a far greater number than the bullets of the enemy.

Mr. Bassett believes that the Medical Corps must have sufficient numbers and sufficient authority to enforce their orders in regard to sanitary regulations.

THE CHRISTIAN HOSPITAL FRAUD.

Report by the Medicolegal Committee of the Chicago Medical Society.

Decision Against the Christian Hospital and N. News Wood for Contempt of Court.

On May 17, 1903, Dr. J. B. Murphy came to the office of the Medicolegal Committee with a package of letters received from physicians of the West and Southwest. The writers of these letters had received announcements from the Christian Hospital, bearing Dr. Murphy's name and picture. They were indignant that Dr. Murphy should be a party to this scheme and they so wrote—sometimes in kindness and sometimes in hot, abusing anger. In the lot was a letter on the hospital paper bearing Murphy's picture and his name, asking him to join the staff; this was dated May 12. It was apparent that many of the circulars had been issued prior to May 12, since many replies were written Murphy under date of May 12, or earlier. Dr. Murphy asked the help of the Committee. We began an investigation. The following is a synopsis of the main points covered:

The plan of procedure of the Christian Hospital originated with A. C. Probert. Its details were executed by N. News Wood. Probert spent his earlier life in New Jersey. His first operations in the West were in northern Wisconsin. He did not then claim to be a physician. He had business careers in Ashland and vicinity, and finally landed in the Wisconsin penitentiary at Waupun. On his release he came to Chicago. We have no certain knowledge of his business until he appeared as Dr. Probert of St. Luke's Hospital of Niles, Michigan. That institution placed Dr. Senn's name on its literature. Dr. Senn publicly disclaimed the relation. Use was then made of the name of Dr. Kinsman of Boston, who published an affidavit setting forth that the use of his name was without authority. There were some complications as to women, notice of which appeared in the Chicago daily papers, and Chas. W. H. B. Granville left for the Southwest. Public sentiment and the Michigan authorities were too much for St. Luke's of Niles, under the Probert-Granville management. Probert went a few miles over the line to Bourbon, Ind. He carried a letter from a Niles citizen since then arrested. He opened a bank at Bourbon. In a short time the bank failed. In 1903 indictments against Probert were still in existence in that county. A former editor of a Bourbon paper gave us the above facts. Probert told our informant that he intended coming to Chicago to work the physicians with a scheme similar to that of St. Luke's of Niles. He came to Chicago and went in with Wood on the Christian Hospital proposition. In June, 1903, he was arrested by the postal authorities for using the mails to defraud. His picture in prison garb, with a sketch of his career, was in the Chicago papers. In the same month he opened a bank at Eau Claire, Michigan, a small town near Chicago, supplied by the Chicago papers. In October, 1903, the Chicago papers contained an account of the suspension of this bank. In November, the United States courts found him guilty and fined him $500. He then went to New Mexico. In the spring of 1904 the Chicago papers announced the failure of his bank in New Mexico. He is said to be in Michigan now. Dr. Wood we first hear of as having a lying-in hospital at Des Moines, Iowa. Later he had another institution at Omaha. We were given a list of people, three of whom lived in Chicago, and the remainder in Iowa and Nebraska, who could tell us of the conduct of these institutions. None of these people responded to inquiries. Dr. Wood came to Chicago about 1892. He opened a hospital on La Salle avenue. The steps in the evolution of the Christian Hospital are set forth clearly in Judge Holdom's decision.

On Monday, May 18, Dr. Murphy and this committee conferred with State's Attorney Deneen. It was agreed that the

United States could get evidence more easily than could the State. We then conferred with United States Inspector Stewart. His men went to work at once. Evidence was gathered until June 1, when Wood and Probert were arrested. On June 2, Inspector Ketcham told us that the government had enough evidence. On June 3, Judge Holdom enjoined the institution and its officers from alleging that Dr. Murphy was, or ever had been, connected with the Christian Hospital, also from selling any more certificates bearing his name or picture, or from sending out advertisements similar to those formerly used. In March, 1904, Dr. Murphy received a large number of complaints that the Christian Hospital was again using his name. Especially kind letters were written by Drs. Crysler of Yazoo City, Miss., Murphy of Enterprise, Miss., and Persons of Montgomery, Ala. These letters came principally from the South. It was apparent, then, to all of us, that denials such as those of Drs. Senn, Kinsman, Delafield, Deaver, and Bernays, and even the more active course of Dr. Murphy and our committee during 1903, were ineffective. Mr. Dacy, the very able attorney of the Society, who had handled the case originally, was ill, so Dr. Murphy called in his attorney, Judge Geo. W. Brown. Again we started gathering information. We got track of some fifty men, more or less, who had secured certificates since the issuing of the injunction. These were distributed as follows: Pennsylvania, 8; Indian Territory, 1; Florida, 1; Bermuda, 1; West Virginia, 3; Ohio, 6; Alabama, 2; Indiana, 2; Michigan, 1; Tennessee, 1; California, 1; Missouri, 4; New York, 2; Kansas, 3; Kentucky, 2; Oklahoma, 1; Oregon, 1; Maine, 1; North Dakota, 1; Iowa, 1; Louisiana, 3; South Carolina, 1; Maryland, 1; California, 1; Texas, 2.

Men were sent out gathering affidavits from these purchasers. On the strength of these affidavits and accompanying certificates, Wood was brought into court.

The main defense centered around two points. The first was that Dr. Murphy's proper action was for libel, and that this court could not enjoin a libel. If you know that a man has been and still is libeling you, you can sue him for damages, but you can not enjoin him. The distinction made by Judge Holdom between a libel and a libelous action that is resulting in fraud is made clear to any layman.

The second was that no man can be restrained from using an uncopyrighted picture. Around most schools and hospitals pictures of physicians, clinics, etc., are usually on sale. If not copyrighted, any of these can be used to embellish anything, with this limitation, says Judge Holdom, that such use is improper if this use can be interpreted as meaning that anybody therein is endorsing or is in any way responsible for the institution making use of the picture.

As to the question of willfulness, Judge Holdom cited their use of the golden rule—the claim to effect Christian and humanitarian cure through the use of all means known to skilled physicians and surgeons, aided by magnetic and mental healers, etc., and their lack of consistency therewith; the misstatements embodied in a letter sent out after the injunction issued—but this is better read at first hand.

DECISION OF JUDGE HOLDOM.—(ORALLY.)

Murphy vs. Christian Hospital, N. News Wood, et al.

Proceeding for contempt for violation of injunctional order.

The environment of this case is somewhat peculiar. An institution known as the "Chicago Store" was first incorporated with a quarter of a million dollars of capital stock, upon its face, quite a business enterprise. Thereafter the corporate name was changed to "The Christian Medical Dispensary and Humane Hospital;" and then, on June 23, 1902, the latter name was changed to the "Christian Hospital."

We find that the "Christian Hospital," according to its designation in its literature, adopted as its beacon light the golden rule, "Do unto others as you would have others do unto you;" but from the nature of its peculiar methods, and the inducements held out to the unsophisticated and confiding doctors in the rural districts, it appeared in fact to conduct its affairs by the "David Harum" golden rule: "To do others before they have a chance to do you."

It is not necessary for me to pass upon the professional ethical condition which environed Dr. Wood and the "Christian Hospital," or his assistants, but the evidence shows that an eminent surgeon of this community, Dr. John B. Murphy, without his knowledge or consent, was subjected to the mortification of having his name, in facsimile of his signature, with his degrees following his name, together with a photograph of himself apparently about to engage in the performance of a surgical operation in a clinic, attached to the so-called certificate of membership in the "Christian Hospital."

Some criticism has been made of Dr. Murphy because he did not at once repudiate the action of Dr. Wood in connecting him, without warrant, with the "Christian Hospital." The letter of May 12, 1903, was the first intimation Dr. Murphy had of the liberties which had been taken with his name and professional standing. At the same time, Dr. Murphy received a very scathing letter from a Dallas, Texas, physician, which was inspired by the receipt of Dr. Wood's "Christian Hospital" literature. It was a very just and righteous expression of that doctor's indignation at Dr. Murphy for having, as it appeared to him from the literature received, deserted that high pedestal which he had theretofore occupied among his brethren in the medical profession, and stooped to connect himself in that way with this "Christian Hospital," which made propositions so unethical in its literature in an attempt to induce these rural doctors to become members of the hospital staff and receive the certificates which it offered for sale on a rising scale of from $5 to $25. When Dr. Murphy was confronted with what Dr. Wood had so audaciously done, and the unheard-of liberties he had taken with his name, it is not doing any violence to presume that Dr. Murphy was impressed with the utter futility of any attempt to do anything with a person of Wood's character, to head off further evil consequences to himself flowing from that which Dr. Wood had so unwarrantably done; and it is not at all surprising that instead of approaching Dr. Wood, he appealed at once to his lawyer to appeal to the courts to prevent further trouble for himself and his good name, and to prevent the sick and physically infirm from being further deceived through the alluring literature of Dr. Wood, or to entrust themselves to the so-called "Christian Hospital." It is apparent and self-evident from the facts in evidence that Dr. Wood had not connected with him or the Christian Hospital surgeons or physicians of the standing of Dr. Murphy, or any of the other gentlemen, whose names are so well known in medicine and whose pictures appear with Dr. Murphy in the clinic portrayed upon the certificates in evidence. It follows, therefore, that Dr. Murphy is excused and exonerated from any obligation to appeal to Dr. Wood before he filed this bill. The law requires no one to do a useless act before appealing to the law to right a wrong. I have no doubt that in the circumstances of this case, this court can give the relief that is prayed here, so far as to prevent the issuing of certificates with the name of Dr. Murphy, and in connection with it the picture of him about to engage in an operation in a clinic. However, the picture not being copyrighted, and having been given to the world free, any one may use it, but no one may, however, use it in connection with Dr. Murphy's name, so that the public may be deceived, defrauded or misled, and it is part of the province of a court of equity to prevent such frauds from being perpetuated.

Even assuming that this bill may not be sufficiently verified under the statute, still that would not make void the injunctional order, notwithstanding this court might, on proper application, dissolve the injunction. The court having jurisdiction of the parties and the subject matter, it is immaterial, howsoever erroneous the injunctional order may be; while it is in force, it must be obeyed, and he who willfully disregards it must pay the penalty of such rash and unlawful conduct.

What I may now say in relation to the evidential facts of this case is simply for the purpose of seeing where credence should be given, and who and what statements, if any, should be discredited, and in ascertaining the truth.

It is admitted that the first time Dr. Murphy knew of the unlawful use of his name was through the letter of Dr. Wood of May 12, 1903; that prior thereto Wood had no personal communication whatever with Dr. Murphy, nor was there any relationship between them, medically or otherwise. There is no evidence tending to show that Dr. Wood had any business, in any way, with Dr. Murphy, or that they operated together surgically at any time or place; or that Dr. Murphy was ever at the Christian Hospital, or even had a speaking acquaintance with Dr. Wood; so that no relationship existed between them which could, by the most liberal construction, lead Dr. Wood to the conclusion that he was at liberty, or might reasonably presume to take the liberty, to use Dr. Murphy's name and reputation in connection with the Christian Hospital as he did.

Now, Dr. Wood claims that the only authority for his actions rests on the statement of one Dr. Arthur C. Probert that Dr. Murphy had told him that his name might be so used. Probert appears as the vice-president of the Christian Hospital. Is such statement alleged to have been made by Probert borne out by the proofs? In that letter of May 12, Wood did not say anything about any arrangement or understanding with Dr. Probert. Wood simply told him in this letter to Murphy, that the Board of Directors had elected him, Murphy, to that position, and wanted him to accept of it in writing. There was not anything said in that letter, or at any other time, except upon this hearing, about Dr. Probert.

Now, Dr. Probert seems to be a mythical personage. He appears as vice-president of the Christian Hospital, and if he does exist——about which there is room for much doubt—he certainly must be, if he is entitled to the long string of degrees appearing after his name from regular collegiate institutions, a very learned gentleman; and a gentleman of so much learning as these degrees tend to indicate, would naturally be known, not only to many institutions, but to men of scholarly attainments and of high professional standing in this community, and he certainly could not be lost without creating considerable public notoriety. If Dr. Probert is not a myth, it is strange indeed that he has not been heard from; that his affidavit has not been tendered here, or that he has not come into court in person and by his testimony justify Dr. Wood in the use at least of Dr. Murphy's name. We do not hear from Dr. Probert at all, and now Dr. Wood disclaims any knowledge as to his whereabouts; neither does he vouchsafe any information as to the time or place where he last knew of him, or on what pretense he left this jurisdiction. The position of Dr. Wood is untenable; his representations in relation thereto glaringly false; his contentions are bald and shallow pretenses, which lack even the semblance of verity.

Has Dr. Wood or the Christian Hospital violated, willfully, the injunction of this court? Has Dr. Wood done any act in an en-

deavor to disclaim the right to do what he has done? To disclaim the verity of that which he has held out to those unsuspecting and confiding physicians all over this country? Not at all. Did he, by one word or insinuation, intimate to those gentlemen that Dr. John B. Murphy had never been connected with the Christian Hospital, or with him, and that the use of Murphy's name was absolutely and entirely unwarranted, and that he had presumed, without authority from Murphy, that he would be glad to be connected with the Christian Hospital, and therefore assumed to use his name? Not a word of truthful exposition escaped him. The only interpretation of which Wood's correspondence is susceptible, is, that through some disagreement between himself and Dr. Murphy, some disagreement that had arisen after and during the time of his assumed connection with the Christian Hospital, their relationship had been discontinued, and that in the future Dr. Murphy would cease to be what he had been to the Christian Hospital in the past.

I am unable to discover from these letters any willingness or desire on the part of Dr. Wood to either right the wrong he had done or to obey the injunction of this court. It does not appear from his actions that he was endeavoring to comply with or obey the injunction of the court, but that he was in fact endeavoring, in his own way, to evade the effect of that injunction, to evade the effect of it upon the persons to whom he wrote, by concealing from them the fact that this court had enjoined him from using the name of Dr. Murphy because he had assumed so to do, without warrant, and against law and right. I thoroughly agree with what Judge Brown has in effect said, viz.: that if there was no evidence in this record other than the letters which Wood wrote to Haynes and Clifford and those various other country medical men, that they would be sufficient in themselves to at least show the intentional and willful endeavor to evade the effect of this injunction. Dr. Wood was, by these letters, trying to induce the rural physicians to say that Dr. Murphy's name was not the magnet which drew them to his institution. It is self evident they were induced to join the Christian Hospital staff by the false representations and inducements held out by Dr. Wood, for it is self-evident the Christian Hospital, being very young, it had a reputation to establish, and nobody realized that probably more than Dr. Wood did, and it may well be, that such knowledge was one of the influences affecting his actions, and which prompted him to make this unwarranted use of Dr. Murphy's name; and there is abundant evidence here that certificates have been issued since the service of this injunction of June 3, 1903, upon Wood and the hospital, with the name of Dr. Murphy and with his picture in the surgical clinic, and I am of the opinion that the correspondence with Clifford and others was in effect a reissue of the certificates then in their hands. I am free to say that what appears to have been an attempt to obliterate the name of Dr. Murphy was simply a subterfuge, and it is too plain to admit of denial that the name of Dr. Murphy was more apparent after the attempted obliteration than it really was before, because the mark being so lightly drawn through it, instead of obliterating it, simply accentuated and attracted more particular attention to Dr. Murphy's name than if the mark had not been placed there, and Dr. Wood can not be excused because he claims to have delegated the task of erasing Dr. Murphys name to another.

Aside from Dr. Murphy, the public have a right to be protected, and if these things can be done, it seems to me that the law would be lacking in one of its great attributes if it was impotent to remedy so great a wrong. Can a man's professional reputation be slandered and outraged and the law afford no adequate relief? If there be a remedy—and surely there is—and the injury be irreparable at common law, is a court of equity without power to grant relief? I doubt not its beneficent arm will be outstretched to stay the hand that smites and shield the object of the assault from further harm. I base this conclusion on the law on broader grounds than taken by counsel for respondents—that is aside from the invasion of the rights of Dr. Murphy—on the broad humanitarian ground that the sick and afflicted will be protected from being deceived and misled, and perchance be lured to their death by the false representations that at the Christian Hospital they will find, not Dr. Wood, but Dr. Murphy, and other men of his caliber to minister to their diseased and afflicted bodies. Such charlatans as Dr. Wood, and such conglomerate affiliation of quackery and baser schools of medicine to be found in practice at the Christian Hospital, will not only be condemned, but restrained by law from pirating on the public when fraud and deceit are the alluring factors—and the court is asked to do so.

Now, Dr. Wood had no business to ignore this injunction. He had no business to go on in his own way and do just as he might see fit. The least he could have done after he was served with this injunctional order, if he desired to proceed further in the matter with the business in which he had started, was to have consulted a lawyer, and it is not to his credit that he neither saw a lawyer nor came to the court asking to have this injunction dissolved. But without the advice of counsel, he went his own way and kept along in the same illegal path, with only a subterfuge of a pretense to comply with the mandate of this court, and inserted the name of Dr. Somers as a pretended substitute for that of Dr. Murphy, while so far as can be seen, Somer's name appeared to be added, not Murphy's taken out.

I am more embarrassed in relation to the punishment which should be meted out to Dr. Wood and the Christian Hospital than I am about the other branch of the case. I am inclined to think, from what appears on this record, Dr. Wood is a dangerous man to any community. He is not free from suspicion, and a grave one, that the manner in which the name of Dr. Murphy appears is in law a forgery. A criminal act. It purports to be Dr. Murphy's signature, but I am not here to punish him for forging Dr. Murphy's name, but I may take into consideration the moral turpitude of Dr. Wood in determining the degree of punishment which should be meted out to him for his willful violation of the injunctional order.

I will fine the Christian Hospital two hundred and fifty ($250) dollars, and I will fine Dr. Wood one hundred ($100) dollars, and sentence him to ten days' imprisonment in the county jail, and it is so ordered.

We will not close without some personal references. Dr. Murphy has expended a large sum of money in accumulating evidence needed to rid himself, the profession, and the people from this menace. Our thanks are also due to Drs. Deaver and Taylor of Philadelphia, Wiggins of New York, McCormack and Wathen of Kentucky, Dinnen and Bruggeman of Indiana, Blanchard of Wisconsin, Sheldon of Iowa, beside a large number of others to whom we are just as grateful. Signed, W. A. Evans, H. A. Moyer, C. S. Bacon, Medicolegal Committee, Chicago Medical Society.

Treatment of Hernia.—Dr. J. M. Banister of the First Reserve Hospital, Manila, P. I., calls our attention to two errors which occurred in his manuscript and which also appeared in the publication of the article, "The Radical Treatment of Nonstrangulated Inguinal Hernia from the Standpoint of the Modern Surgeon," in THE JOURNAL, Oct. 22, 1904. On page 1226, in the remarks on Kocher's operation, the sentence should read: " . . . owing to the proximity of such important structures as the *external*" (not internal, as printed) "iliac vessels . . . ." In the last paragraph on the same page the name of Dr. Dawbarn of New York is erroneously given as "Dr. Newbern."

The Books of the Year 1904.—Those who were interested in the summary of the new books published during the year 1904 which we gave in THE JOURNAL, January 7, page 53, will be further interested in the following from the *Medical Book News*. Its summary, unlike our own, includes new editions and republications. "Were any reader of this magazine, possessing $1,489.58, desirous of expending it in the purchase of new books for his library, every standard American and English work on medicine in each of its various branches, and on dentistry, pharmacy, chemistry and the allied sciences, published during the current year, could be included. This would mean the acquisition of 575 titles, containing 193,094 pages, with 40,689 illustrations, many in colors. Reducing the different values to a like basis, the cost of each octavo book of 335 pages and 70 illustrations would cost an even $2.59." In this connection we may remark that the list which we published was so nearly complete that our attention has been called to only one book as having been omitted from our list. That one is "Semeiology and Diagnosis of Diseases of Children." N. Filatov and Frank B. Earle, 2 vol., $7, Cleveland Press, Ogden avenue and Lincoln street, Chicago.

State Boards of Registration.

COMING EXAMINATIONS.

New Hampshire State Boards, University Club, Concord, February 1-2. Regent, Henry C. Morrison, Concord.

Board of Medical Registration for Vermont, Burlington, February 7, 8 and 9. W. Scott Nay, M.D., secretary, Underhill.

Nebraska State Board of Health, State House, Lincoln, February 8-9. George H. Brash, M.D., secretary, Beatrice.

Kansas State Board of Medical Registration and Examination, Topeka, February 14-15. Secretary, G. F. Johnston, M.D., Lakin.

Officers of Ohio Board.—The Ohio State Board of Medical Registration and Examination organized January 3 for the year by the election of the following officers: President, S. B. McGarvan, Cadiz; vice-president, H. H. Baxter, Cleveland; secretary, Frank Winders, Columbus; treasurer, S. M. Sherman, Columbus.

West Virginia 1904 Reports.—Dr. H. A. Barber, secretary of the State Board of Health of West Virginia, reports the examinations held at Clarksburg, Charleston and Wheeling, in April, July and November, respectively. At the oral and written examination, held at Charleston, April 12-14, the number of subjects examined in at each examination was 9; total number of questions asked, 120, and percentage required to pass, 75. The total number examined was 63, 33 of whom were undergraduates. Of the graduates 28 passed and 2 failed, and of the undergraduates 28 passed and 5 failed.

PASSED.			Per
College.	Year Grad.		Cent.
Coll. of P. and S., Baltimore	(1887)		75
Illinois Med. Coll.	(1899)		76
Med. Coll. of Virginia	(1901)	81, (1903)	88, 88
Univ. of the South	(1903)		87
Miami Med. Coll.	(1902)	81, 81; (1878)	84
Univ. of New York	(1897)		95
Eclectic Med. Inst.	(1890)		75

Western University of Pa.	(1900)	87
Univ. of Berlin (Germany)	(1901)	86
Jefferson Med. Coll.	(1903)	87
Maryland Med. Coll	(1903) 84, (1901)	85, 85
Univ. Coll. of Med.	(1903)	82, 82
Univ. of Maryland	(1900)	87
Univ. of Virginia	(1901) 80, (1900)	88
Meharry Med. Coll.	(1904)	87
Johns Hopkins Med. Coll.	(1899)	89
Howard Med. Coll.	(1903)	87
Southern Homeo. Med. Coll.	(1904)	75
Shaw Univ.	(1902)	75
Toronto Univ.	(1903)	89

At the examination held at Charleston, July 19-21, the total number examined was 104, 36 of whom were undergraduates. Of the graduates 59 passed and 9 failed, and of the undergraduates 21 passed and 15 failed.

PASSED. College.	Year Grad.	Per Cent.
Med. Coll. of Virginia	(1904) 87, 87, 87 : (1897)	82
Univ. of Maryland, (1904) the grade of 86 was reached by four; (1903) 90, (1901) 80.		
Univ. of the South, (1903) 86, (1904) the grade of 80 was reached by three, 84 by one.		
Kentucky School of Med.	(1901) 76, (1904)	75
Univ. Coll. of Med., (1904) the grade of 87 was reached by three, (1903) 83.		
Pulte Med. Coll.	(1904)	79
Coll. of P. and S., Baltimore, (1904) the grade of 84 was reached by six, (1903) 79.		
Maryland Med. Coll., (1904) the grade of 83 was reached by eight.		
Kentucky Univ. Med. Coll., (1904) the grade of 79 was reached by three.		
Baltimore Med. Coll., (1904) the grade of 85 was reached by five.		
North Carolina Med. Coll.	(1904)	85
Western Pa. Med. Coll.	(1904)	90
Hospital Coll. of Med.	(1902)	80
Columbian Univ. Med. School.	(1903)	87
Jefferson Med. Coll.	(1904)	85
Starling Med. Coll.	(1904)	80, 80
Univ. of Louisville	(1904)	79
Johns Hopkins Med. Coll.	(1902)	86
Ohio Med. Coll.	(1899)	79
Howard Univ.	(1903)	80
Lexington National Coll.	(1900)	77

At the examination held at Wheeling, November 22-24, the total number examined was 35, 7 of whom were undergraduates. Of the graduates 22 passed and 6 failed, and of the undergraduates 5 passed and 2 failed.

PASSED. College.	Year Grad.	Per Cent.
Univ. of Maryland	(1902) 94, (1904)	91
Detroit Coll. of Med.	(1904)	91, 91
Coll. of P. and S., Baltimore	(1304)	87
Univ. Coll. of Med.	(1904) 91, 91 ; (1901)	84
Maryland Med. Coll.	(1902) 88, (1904)	80, 80
Ohio Med. Univ.	(1904)	78, 78
Howard Univ.	(1904)	86, 86
Memphis Hosp. Med. Coll.	(1902)	80
Med. Coll. of Virginia, (1902) 90, (1903) 91, (1904) the grade of 87 was reached by three.		
Jefferson Med. Coll.	(1903)	91

The Public Service.

Army Changes.

Memorandum of changes of station and duties of medical officers, U. S. Army, week ending Jan. 14, 1905:

Stiles, Henry R., asst.-surgeon, ordered to report to Major William H. Arthur, surgeon, president examining board, Jan. 17, 1905, Washington, D. C., for examination for promotion.

Reilly, John J., asst.-surgeon, left Jackson Barracks, Louisiana, en route to Army and Navy General Hospital, Hot Springs, Ark., for treatment.

Ebert, R. G., surgeon, left Vancouver Barracks, Washington, with artillery en route to Fort D. A. Russell, Wyoming.

Morse, A. W., asst.-surgeon, ordered to accompany field artillery to San Francisco and then return to post.

Chidester, W. C., asst.-surgeon, left Fort Lawton, Washington, on ten days' leave of absence.

Coffey, Albion McD., contract surgeon, ordered from Joplin, Mo., to Fort Warden, Washington, for duty.

Porter, Elias H., contract surgeon, granted an extension of his leave of absence to Jan. 29, 1905.

Casaday, George H., dental surgeon, granted leave of absence for three months, with permission to visit the United States.

Freeman, Charles E., contract surgeon, granted leave of absence to include Jan. 31, 1905.

Foulkes, Bruce, contract surgeon, arrived at San Francisco January 2 for one month's leave of absence.

Truax, Jesse P., contract surgeon, left Fort Ward, Washington, January 5 for temporary duty at Fort Lawton, Washington.

Sparremberger, Frederick H., contract surgeon, left Fort Mott, New Jersey, January 7 on leave of absence for ten days.

Treuholtz, Clarence A., contract surgeon, returned to duty at the Army General Hospital, Fort Bayard, New Mexico, January 5 from leave of absence.

Wall, Francis M., contract surgeon, returned to duty at Fort Oglethorp, Georgia, January 9 from leave of absence.

McCall, James H., contract surgeon, left Fort Moultrie, South Carolina, January 10 for temporary duty at Key West Barracks, Florida.

Burr, Roilin T., contract surgeon, returned to duty January 10 at Fort Rodman, Mass., from leave of absence.

Hayes, Melville A., contract surgeon, left Washington, D. C., January 11 for duty at Vancouver Barracks, Washington.

Lemmon, Robert, contract surgeon, arrived, January 11, at Fort Terry, N. Y., for temporary duty.

Oliver, Robert T., examining and supervising dental surgeon, arrived at West Point, N. Y., January 14 for duty.

Navy Changes.

Changes in the medical corps, U. S. Navy, for the week ending Jan. 14, 1905:

Young, R. M., asst.-surgeon, resignation accepted to take effect Jan. 31, 1905.

Taylor, J. S., P. A. surgeon, detached from the *Relief* and ordered to the *Ohio*.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending Jan. 11, 1905:

White, J. H., surgeon, granted leave of absence for six days from January 17.

Wertenbaker, C. F., surgeon, to report at Washington, D. C., for special temporary duty.

Blue, Rupert, P. A. surgeon, detailed as inspector of unserviceable property at the Marine Hospital, San Francisco.

Fricks, L. D., P. A. surgeon, relieved from duty at LaGuayra, Venezuela, and directed to proceed to New York and report arrival by wire.

Korn, W. A., P. A., surgeon, Bureau letter of Dec. 27, 1904, granting leave of absence for seven days, amended so that said leave shall be for four days only.

Atiles, Pedro del Valle, A. A. surgeon, granted leave of absence for seven days from Dec. 26, 1904, under Paragraph 210 of the Regulations.

Edwards, J. W., A. A. surgeon, granted leave of absence for twelve days from Dec. 20, 1904, and three days from Jan. 1, 1905.

Jackson, J. M., Jr., A. A. surgeon, Department letter of Dec. 8, 1904, amended so as to grant leave of absence for nineteen days instead of thirty days from Nov. 26, 1904.

Tuttle, Jay, A. A. surgeon, granted leave of absence for thirty days from January 9.

Wetmore, W. O., A. A. surgeon, granted leave of absence for ten days from January 4.

Stearns, W. L., pharmacist, to proceed to Washington, D. C., for special temporary duty.

Gibson, F. L., pharmacist, leave of absence granted for thirty days from Jan. 1, 1905, amended to read ten days from Jan. 1, 1905. Relieved from duty at Honolulu, T. H., and directed to proceed to San Francisco and report to medical officer in command for duty and assignment to quarters, relieving Pharmacist Chas. Slough.

Slough, Chas., pharmacist, on being relieved from duty at San Francisco by Pharmacist F. L. Gibson, to proceed to Honolulu, T. H., and report to chief quarantine officer for assignment to duty.

CASUALTY

Hanrath, F. R., pharmacist, died at Cleveland, Ohio, Jan. 7, 1905.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon General, Public Health and Marine-Hospital Service, during the week ended Jan. 13, 1905:

SMALLPOX—UNITED STATES.

District of Columbia: Washington, Jan. 1-7, 2 cases.
Illinois: Chicago, Jan. 1-7, 16 cases; Peoria, Dec. 1-31, 7 cases.
Louisiana: New Orleans, Jan. 1-7, 5 cases, 3 imported.
Massachusetts: Jan. 1-7, Everett, 2 cases; Hyde Park, 1 case.
Missouri: St. Louis, Dec. 25-Jan. 7, 35 cases, 6 deaths.
New Jersey: Camden, Jan. 1-7, 1 case.
Ohio: Cincinnati, Jan. 1-7, 7 cases.
South Carolina: Jan. 1-7, Charleston, 3 cases; Greenville, 6 cases, 1 death.
Tennessee: Nashville, Jan. 1-7, 6 cases.
Wisconsin: Milwaukee, Jan. 1-7, 3 cases.

SMALLPOX—FOREIGN.

Austria-Hungary: Prague, Dec. 11-24, 24 cases.
Brazil: Bahia, Nov. 29-Dec. 10, 27 cases, 1 death; Rio de Janeiro, Nov. 28-Dec. 4, 296 cases, 108 deaths.
Belgium: Brussels, Dec. 18-24, 1 death.
China: Shanghai, Nov. 13-26, 71 deaths.
France: Paris, Dec. 18-24, 17 cases.
Great Britain: Dec. 18-24, London, 9 cases; Newcastle-on-Tyne, 7 cases; Nottingham, 3 cases; South Shields, 3 cases.
India: Bombay, Dec. 7-13, 19 deaths.
Panama: Dec. 26-Jan. 1, Colon, 1 case; Panama, 1 case.
Russia: Moscow, Dec. 11-17, 7 cases; St. Petersburg, Dec. 18-24, 6 cases, 5 deaths.
Turkey: Constantinople, Dec. 19-25, 8 deaths.

YELLOW FEVER—UNITED STATES.

Texas: Galveston, Dec. 31, 2 cases from S. S. *Horatio* from Para, via Barbados.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, Nov. 28-Dec. 11, 2 cases, 1 death.
Cuba: Habana, Jan. 6, 3 cases, 2 from Austrian vessel *Dora*, from La Guaira and Colon.
Mexico: Dec. 25-31, Coatzacoalcos, 1 case; Juchitan, 1 case; Vera Cruz, 1 case, 1 death.
Panama: Panama, Dec. 25-31, 2 cases.

CHOLERA.

India: Bombay, Dec. 7-13, 2 deaths; Calcutta, Dec. 4-10, 72 deaths.
Russian Empire: Nov. 23-29, Astrachan District, 6 cases; Samara District, 162 cases; Saratov, 40 cases, 19 deaths; Trans-Caspian Territory and Central Asia, Serachs, 27 cases, 20 deaths; Jelisavetpol District, Nov. 22-26, 32 cases; Trans-Caucasia, Baku,

Nov. 14-23, 29 cases, 10 deaths; Batum, Dec. 1-7, 3 cases; Erivan, Nov. 23-29, 1,933 cases, 661 deaths.

PLAGUE.

Arabia: Dec. 1-16, Crater, 47 cases, 47 deaths; Maalla, 2 cases, 2 deaths; Hedjuff (hospitals), 2 cases, 2 deaths; Tawahi, 1 case, 1 death; Shaikh Othman, 3 cases, 4 deaths.

Egypt: Port Said, Dec. 3-10, 1 case, 1 death; Tukh District, Nov. 27-Dec. 10, 3 cases, 3 deaths.

Great Britain: London, Nov. 30, 1 case, from S. S. *Weybridge* from the Rio de la Plata.

India: Bombay, Dec. 7-13, 72 deaths; Calcutta, Dec. 4-10, 12 deaths; Karachi, Dec. 5-11, 27 cases, 22 deaths.

Straits Settlements: Singapore, Dec. 20-26, 1 case, 1 death.

Society Proceedings.

WESTERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.

Fourteenth Annual Meeting, held in Milwaukee, Wis., Dec. 28-29, 1904.

(*Concluded from page 153.*)

The Manufacture and Use of Tin Splints.

DR. ARTHUR T. MANN, Minneapolis, made a plea for the general utility of tin splints. He pointed out the simple equipment necessary to make them; also the ease of making the splints and patterns for them. He described several tin appliances which are useful, among them a device for regaining flexion and extension of the elbow joint after fractures and dislocations. This article will be published in THE JOURNAL later.

Syncytioma Malignum.

DR. H. C. CROWELL, Kansas City, Mo., reported a case and gave a detailed pathologic report of the specimen.

DR. ARCHIBALD MACLAREN reported a case of what he had supposed to be a soft edematous fibroid, but after operation the case proved to be one of syncytioma malignum.

Fractures of the Tarsal Bones.

DR. DANIEL N. EISENDRATH, Chicago, called attention to the surgical anatomy of these bones and to the mechanism of fractures. He reported six cases on which he had operated, and presented the following conclusions:

(1) The astragalus and os calcis bear the entire weight of the body. (2) They are most frequently broken in falls from a height directly on the feet (compression variety), or by tearing off of a portion of one of the bones, either when the heel is fixed or sudden supination or pronation, or in forcible dorsal flexion of the foot. (3) Early diagnosis, on account of the danger of sepsis from secondary skin necrosis, is of great importance. (4) If there is no displacement of fragments, treat the case by a cast for six weeks, with early massage. If displacement should threaten necrosis of skin, convert into an open fracture, and either remove the fragment or suture it.

Ptosis of the Abdominal and Pelvic Organs.

DR. R. C. COFFEE, Portland, Ore., drew the following conclusions:

(1) The peritoneum is attached firmly not only to the diaphragm, but loosely by all its outer surface to the abdominal and pelvic walls by means of loose connective tissue, which allows it to move freely, but holds it always in contact. This connective tissue is much increased around the attachment of the supports of each organ. The irritation underneath and back of the peritoneum is followed by an exudate which fixes it immovably to the abdominal wall. This exudate is soon displaced by an increase of normal connective tissue sufficient to meet the demands. The peritoneum itself is but slightly elastic, its seeming elasticity being due to the elasticity of the subperitoneal connective tissue. (2) Two peritoneal surfaces brought together and held firmly in an aseptic state blend and become one membrane. If suppuration or other disturbance occurs, blending does not take place, but inflammatory adhesions are formed. The former is permanent, while the latter is transitory and will be absorbed generally. This differentiation is all-important. (3) The uterus is suspended entirely by its peritoneum and connective tissue. (4) The so-called true ligaments are not such, but muscles, and therefore perform the same function as all other muscular fibers in the animal organism, which is intermittent contraction, but never constant action. Their function is to sustain the normal poise or balance of the uterus during the changing positions of the body. (5) Whatever may be the cause, the condition existing is a stretching of either or both the peritoneum and connective tissue. The condition may be local or general, and may involve the support of one, more than one, or all the abdominal and pelvic organs. (6) Treatment in a general way will be the shortening of the peritoneum at the points at fault by some method of plication and blending, or by bringing the peritoneum back to its normal contact with the abdominal wall. (7) The method (he described) for suspending the liver is, I believe, almost ideal theoretically, and so far in my experience clinically and experimentally, in that it shortens the normal suspensory ligament, and supplements it by extending the ligament to one or both lobes by blending of peritoneum. (8) None of the operations for gastroptosis so far is theoretically or practically ideal for all cases. The hammock operation, stitching the omentum to the abdominal wall, is best suited to those cases due to adhesions holding the stomach out of place by its omentum, in which the condition accompanies operations on the lower abdomen or pelvis only. No discomfort has been observed by any of my patients. Posterior gastroenterostomy is the best operation for those cases due to dilation or pyloric obstruction of any kind, and is all that is necessary, as it is held by its attachment high up and well back to the transverse meso-colon.

Appendicitis in Women.

DR. ARCHIBALD MACLAREN, St. Paul, Minn., stated that the only safe advice to both the patient and the physician is that the appendix should be removed in the early hours of every acute attack, and especially in the first attacks, when the symptoms last six hours. On the other hand, he does not believe that every case of appendicitis should be operated on as soon as the diagnosis is made, because the surgeon frequently does not see these cases until from the third to the sixth day. The favorable time has now passed, and some of these cases are in such a bad condition that the operation itself may be enough to take away the only remaining chance of recovery. He has done 422 appendectomies. In the first 241 there were 72 suppurative cases. Of these 42 were men and 30 were women. During the same time he removed appendices showing chronic inflammatory changes 153 times in women, and only 17 times in men. He does not believe that chronic appendicitis is as frequent in the male as in the female, but it probably is not twice as frequent in the latter sex. It is, he believes, only a curious accident that he has seen proportionately so many acute cases and so very few chronic cases in men.

Management of Hospitals in Large Cities.

DR. D. S. FAIRCHILD, Des Moines, Iowa, said that the problems involved in the management of hospitals in the smaller cities are difficult and complicated, growing out of two important facts: (1) The supposed self-interest of individual members of the medical profession; (2) the lack of experience and knowledge on the part of boards of management. Public hospitals are generally of three kinds, as determined by the auspices under which they are organized and in part supported: (a) Hospitals under the auspices of some church; (b) hospitals under the auspices of some society, and (c) city hospitals supported by public taxation. The method of appointment of physicians to hospitals is liable to abuse only when piety or church zeal is mistaken for competency. Dr. Fairchild discussed the management of hospitals at great length.

Arthrotomy.

DR. E. WYLLYS ANDREWS, Chicago, described a new method for treating old dislocations of the shoulder joint, and after mentioning the steps of the procedure at some length, he presented the following conclusions:

(1) It must be considered established that great force is never justifiable in old shoulder dislocations. (2) Few cases can be left unreduced, on account of pain and pressure symptoms, on the brachial plexus. (3) Resection is satisfactory, but not ideal or wholly safe. (4) Arthrotomy by the old incisions is tedious, and has never been widely practiced. (5) Arthrotomy by the author's method is simplified and made quicker and safe. It would possibly be as safe as resection, and much more ideal in results.

Curettage and Puerperal Sepsis.

DR. C. E. RUTH, Keokuk, Iowa, discussed the etiology of puerperal sepsis, the kinds of infection, prevention and dangers, and then spoke of curettage, drainage and hysterectomy in such cases.

Our Duty to the United States Army and to Its Medical Corps.

DR. DONALD MACRAE, JR., Council Bluffs, Iowa, pointed out the importance of having a more efficient medical corps in the United States Army.

A resolution was introduced and unanimously adopted, respectfully petitioning President Roosevelt to direct the military authorities to provide a field medical organization for our army at least equal in all respects to the best that exists in any army, and which will meet the approval of military

sanitarians generally, to the end that the sick and wounded in future wars may receive adequate care and attention.

The secretary was instructed to forward a copy of this resolution to President Roosevelt at once.

DR. G. G. EITEL, Minneapolis, read a paper on "Removal of the Covering of the Ovaries in Ovarian Dysmenorrhea," which is abstracted in THE JOURNAL, page 247.

The Diagnosis of Early Tubal Pregnancy.

DR. WILLIAM E. GROUND, Superior, Wis., bases his deductions on the histories and the gross appearance of the uterus and appendages at the time of operation in 28 cases. He is firmly convinced that ample pathology was present to cause the arrest of the fecundated ovum in the tube. Five of his cases were in primiparæ, who gave a history of painful menstruation and leucorrhea. Thirteen cases gave a history of sterility of three or more years' duration. The remaining 12 cases occurred in parous women, who had borne children or had been pregnant in less than three years. Many of these women gave unmistakable evidence of pre-existing pelvic disease. One primipara had been married three years, one five and another eleven years before tubal conception occurred. Two cases occurred in unmarried women, one of whom had had a criminal abortion. Complications arose necessitating abdominal section. An unruptured tube containing a six weeks' fetus was found. Another case, known to have had chronic appendicitis, was taken with sudden, severe pain in the right lower abdomen, followed by considerable shock, but she soon rallied. Menstrual irregularities were denied. Tenderness was present rather low in the iliac fossa. The uterus was enlarged, and a slight bloody discharge came from the vagina. There was an ill-defined tumor to the right of the uterus. The abdomen was opened and found to contain blood clots and bloody serum. The right tube was ruptured on its dorsum at about the middle, but the fetus was still in the tube. Chronic appendicitis was also present, and the appendix was removed. Two cases had small fibroids, and one had an ovarian cyst as large as an orange on the opposite side.

CLEVELAND ACADEMY OF MEDICINE.

Meeting of the Clinical and Pathologic Section, held Dec. 2, 1904.

Dr. C. A. Hamann in the Chair.

Hereditary Muscular Dystrophy.

DR. WALTER G. STERN presented cases of muscular dystrophy of the hereditary type occurring in the same family, girls of 15 and 12. They showed marked shortening of the tendo Achilles, causing them to walk on their tiptoes. The great-grandmother walked on her toes, the grandmother had spasms of the calf, and the grand aunt had contractions of the trunk and extremities. Two uncles were also affected, one so badly that he had to walk on his hands and knees. The father of the children had severe pes equinus. The muscles of the calf were wasted and contracted, and the muscles of the trunk so affected that when he picked up objects he was obliged to crawl up his thighs to regain his equilibrium. The family consists of three daughters and two sons. One of the sons died and before death was so afflicted that he had to crawl. The other son is only 7 and shows, as yet, no signs of the disease. The oldest of the girls was very much wasted, the contractions being almost general, the younger ones showing lesser grades. The pes equinus was so marked in the second daughter that tenotomy had been resorted to, with improvement in her condition.

Suppurative Pericarditis and Chylous Ascites.

DR. C. F. HOOVER cited a case in which the triangular area of dullness in the back was absent and discussed the differential diagnosis of such cases from pneumonia and other conditions. He also presented the notes of a case of true chylous ascites, in which chemical analysis showed the presence of actual chyle, thus distinguishing it from the many cases of ascites in which the fluid is chyliform, but contains no chyle, being due rather to other conditions, such as malignant growths not involving the lacteals. The two kinds of fluid may closely resemble each other, but the chemical analysis will always differentiate. The patient is still alive and has a mass centrally placed in the abdominal cavity, but so far no diagnosis of the lesion has been made.

Typhoid Necrosis of Pharynx.

DR. F. C. HERRICK described a case in which a large area of necrosis with extensive sloughing followed a case of typhoid, the ulceration being so deep as to expose the bone. The case recovered under appropriate treatment.

BOSTON MEDICAL LIBRARY ASSOCIATION.

Meeting of the Surgical Section, held Nov. 30, 1904.

Dr. F. B. Harrington in the Chair.

Enteroptosis and Nephroptosis.

DR. M. P. SMITHWICK emphasized the importance of considering ptosis of the viscera in nephroptosis. In 68 cases studied there was ptosis of the right kidney in all, and in 20 per cent. of the left as well. In 62 per cent. the stomach was depressed; in 7 per cent. the liver, and in 80 per cent. of the 34 cases examined for it there was displacement of the uterus, usually extreme retroversion. Nearly all had neuropathic tendencies, and he believes that this chances to be the point of least resistance. Many of these showed no symptoms whatever of the ptosis. In no case was there a disturbance of the renal function, and in only one case was there any dragging sensation.

DR. W. H. SMITH gave his experience in treatment with abdominal supporters. Unpadded abdominal bands proved failures except in cases associated with gastroptosis. But an accurately fitted corset-like belt, applied while the patient is lying down, will hold the intestines up against the liver and prevent the kidney from falling. Intelligent co-operation on the part of the patient and a proper fit are indispensable.

DR. F. G. BALCH reported the actual results at the Massachusetts General Hospital following operative treatment from 1890 to 1904. Of 92 cases treated 86 were females, 6 males; 61 married, 25 single; in 33 pregnancy was assigned by the patients as the starting point of her trouble and in 10 trauma. The patients remained in the hospital from 15 to 45 days, an average of 28 days. Seventeen had other operations done at the same time. Eight cases were found septic. Twenty-two had urinary symptoms before operation. Final results were ascertained in 41 cases. Twenty-eight were relieved, 13 not relieved. Balch considered operations of doubtful value in nervous cases and would try supporters first. Long rest and proper care are necessary for the success of the operation.

DR. J. H. CRANDON presented the records of the Boston City Hospital. During the last 10 years 17 cases were operated on. Their ages varied from 20 to 59 years. [illegible] were women. The trouble had lasted from five months to 13 years. Five patients reported themselves as cured, 1 better but not well, 2 have had a recurrence, and 2 were cured only after a subsequent operation for gallstones. No record was obtained in 7.

DR. H. D. CHADWICK said that two symptoms call for operation: first, a burning sensation along the ileo-hypogastric nerve, and second, distress and restlessness after going to bed. Apparatus adds to the discomfort. He has operated on 20 cases with but three failures. In two of these the symptoms continued, and the third did not stay fixed.

DR. A. T. CABOT suggested that, perhaps, the vein of the right kidney being shorter than the artery is why it is occluded more quickly. This suggestion appeared to be borne out by three cases of profuse hematuria seen by him. Early operation is important; late cases are often not benefited. He advised fixation with an insoluble suture, such as silk, putting the stitches only through the capsule. He did not approve of Edebohls' method which, he believes, causes pain. The kidney must be fixed so that the liver can not press on it.

DR. PAUL THORNDIKE examined 272 women, selected at random, for floating kidney, and found it present in 112 cases. None of these women had any symptoms attributable to the

ptosis. He advised care in choosing operative cases, but preferred operation to wearing a belt.

DR. A. K. STONE said that some cases seem to have inherited the trouble. He has noted a great variety of symptoms. Even though a kidney can be felt it may not be the cause of the trouble. He operates only when the displacement is the cause of all the symptoms. He has had good results from the use of apparatus, but it must be fitted accurately.

DR. W. B. CONANT makes a lateral incision and uses absorbable sutures, but does not split the capsule. He enters the peritoneal cavity and explores all other organs, treating them, if necessary. He fastens the kidney on a shelf between the muscles. A truss may be useful if pressure is rightly directed.

DR. R. C. LARRABEE thought that these cases are usually neurasthenics and that they suffer from crises of pain. Ptosis of the kidney, he said, is a very common anomaly and rarely productive of any harm. A corset-like bandage may tide over an attack and thus obviate the necessity of an operation.

DR. G. W. GAY approved of Osler's dictum, "If the patient does not know of the ptosis, do nothing."

DR. F. B. LUND said ptosis of the kidney is usually a part of a general visceral ptosis. Operation is safe, but any abdominal support will give relief.

DR. D. H. CRAIG said that a belt acts like a splint and that massage is necessary if the abdominal muscles are to fulfill their function.

DR. C. P. PUTNAM has obtained good results from manual manipulation, the patient standing upright. Congestion is relieved and the pain ceases.

Travel Notes.

FOUR THOUSAND MILES THROUGH INDIA BY RAIL IN MIDSUMMER.

NICHOLAS SENN, M.D.
CHICAGO.

(*Continued from page 65.*)

INDIAN SUMMER CLIMATE.

The hot season in India begins with the month of April and is expected to end with the month of October. It is said that April and May are the hottest and that November, December and January are the coolest months of the year. On the way from Tuticorin to Madras the shade and night temperature rose to 98 F. and the temperature in the sun to 119 F. Soon after leaving Madras rain set in and continued without interruption until we reached Calcutta and during the first day I remained in that city. The atmosphere was saturated with humidity and added greatly to the discomforts and actual suffering from heat, although the temperature at night and in the shade did not exceed 98 F. The air was not disturbed by the slightest breeze, it was motionless, paralyzed, stifling. Breathing required an effort and the sweat poured from the surface even when at rest.

> "'Heat, ma'am,' I said; 'it was so dreadful here that I found there was nothing left for it but to take off my flesh and sit in my bones.'"—Sydney Smith.

How often did I envy those natives, with their lithe, slender, fatless bodies and their long arms and legs and flexible joints. In squatting, the easiest resting position for these natives, the legs fold on themselves like a jackknife. The agony I experienced from a combination of humidity, heat, and the lazy, sleeping air during the two nights and days I spent in Calcutta would be difficult, yes, impossible, to describe; bathed in sweat, panting for breath, with only partial relief from ice and soda and from vigorous pulling of the bedroom punkah throughout the night, by men employed for that purpose.

A word concerning the punkah puller. Two men or two women, or one man and one woman are hired for the night, and they receive 8 cents each for their easy work and loss of sleep. One night I had two men at the ropes; about midnight the to and fro motions of the punkah became less and less and finally almost came to a standstill. I went to the door and found one of them sound asleep and the other barely awake. The slight jerks were directed by the spinal cord exclusively; the brain was sleeping. A few sharp words brought life to men and punkah.

I was made to comprehend by a trying experience the meaning of

> "A dem'd, damp, moist, unpleasant body."—Dickens.

I spent a whole forenoon in visiting the Calcutta Medical College and large government hospital connected with it, under the guidance of Major Drury, I.M.S., principal of the school. We inspected the laboratories, walked from ward to ward, climbed stairs innumerable and, although an attendant with an enormous fan accompanied us and gave us the full benefit of the useful article, I soon felt the sweat running in streams down my legs and into my shoes and, in spite of frequent wiping of face and neck, the collar soon wilted into a shapeless rag. It was then it occurred to me:

> "Ay, now am I in Arden; the more fool I. When I was at home I was in a good place, but travelers must be content."—Shakespeare.

For once I was glad when the visit was at an end and the courteous major took me to his private apartments, where a most luxurious breakfast was served and where my torturing thirst was quenched with ice and claret. As soon as we arrived in the room, the major suggested that I should make myself more comfortable by removing the coat. I did so most willingly and then discovered to what extent the clothing had become saturated by the profuse sweating. Judged by the clothing, and found near the Ganges, the suspicion would have been well founded that I had been rescued a few moments ago from drowning in the sacred river. Without rain and sweating the clothing would become moist from the excessive humidity of the atmosphere. What discomfort and annoyance this creates. Try under such circumstances to fetch in a hurry from the wet trousers pocket with a sweating hand a coin for a tip and you will find that the pocket becomes a veritable trap for the hand, which is with difficulty extricated without everting the pocket and scattering the coins.

It seemed to me strange that the temperature increased as I traveled north, but in leaving the coast the humidity gradually diminished, and in the interior the air was comparatively dry. The thermometer I carried with me registered 132 F.; on several occasions the mercury reached the maximum limit in the sun and would undoubtedly have gone higher had there been additional space. This high temperature was registered at Agra, Delhi and Jaipur. The night and shade temperature on the whole trip from Calcutta to Bombay ranged between 92 to 105 F. The Bombay weather was very much like that of Calcutta, rain and humidity, but the temperature was a little lower and occasional breezes diminished the sweating and relieved the intense sense of heat.

All through India the absence of a breeze made the heat distressing. Some days about 4 o'clock in the afternoon a slight agitation of the atmosphere would begin; enough to shake slightly the leaves of the omnipresent nim trees and would bring with it a decided relief, but even this slight attempt on the part of the atmosphere to counteract the effect of the burning sun was always of short duration. It was interesting to observe how the animals, wild and domestic, behaved during the hottest part of the day. The water buffalo is a great bather and he is not particular about the nature of the bath; if he has any preference, it is for the mud bath. In passing the many water and mud holes along the line of the railroad, I have often seen through the car window two long, flat, reclining horns and a pair of sleepy or closed eyes just above the level of the mud or water, and in looking closer might distinguish back of them the ridge of the spine, the balance of the body being completely immersed. The buffalo has three objects in view when he goes bathing:

To rid himself for the time being of pestering insects, to obtain relief from the intense heat and to obtain a soothing rest after his liberation from the hard, primitive yoke. Sometimes we saw a herd of these animals closely packed in a small pool or mud hole. It is a peaceable, tolerant animal, so that even when standing space is scarce, these animals of burden make room for each other without the slightest indication of selfishness. I fancy that the water buffalo prefers mud to water for his bath, for it leaves a thick layer of mud on the surface of his body, which soon dries into a crust, a further protection against flies and mosquitoes. The bullock, sheep and goats seek the shade of trees during the hottest part of the day, and if the trees are few and the animals numerous, every inch of it is made useful, and, as the shade moves, the family of animals shifts in the same direction to protect themselves against the scorching rays of the sun.

The proud peacock, so numerous all through India, but more especially in the eastern part, forgets for a time his vanity when the sun is in a position to send down on poor India its most scorching rays. He folds and hangs his gaudy tail and sneaks away into the shade of a clump of shrubs or cactus hedge and lowers his microcephalic head with half closed eyes in obedience to his majesty of the day. India swarms with turtle doves and the telegraph wires are their favorite perch. In many stretches of the country from one to a dozen of these tidy, innocent birds can be seen perched on a wire between two telegraph posts as the train rushes by. When the temperature rises to 130 F. and more, the wires become too hot for their tiny red feet and they are driven by the heat to find protection in the shade.

Man appears to possess the greatest resisting power against heat. The coolie, bareheaded or with a few pads of cotton cloth wrapped about his head in the form of a turban, can be seen at work any time of the day, no matter what the thermometer may say. From early morning until late at night he toils in the fields, plowing, sowing, harvesting, or dipping water, as the case may be, to earn his scanty livelihood. In many parts of India the month of September is the most trying one. My guide at Delhi called it the "sickness month," and informed me that during the month few escaped fever, which would last from one to several days. I presume a mild form of malaria.

The insects were not so troublesome as I expected. At Jaipur the flies were numerous and aggressive. In the hotel at Calcutta I found my bed screened with mosquito bar. As the evening was extremely sultry and as I heard no mosquito music, I removed it. Next morning I found the uncovered part of my body checkered with ugly mosquito bites, the noiseless minute had deceived me and wrought the mischief during the few snatches of sleep that came to me that awful night. I am glad that I have seen India at its worst, so far as the climate is concerned, and that I have escaped with my life and my health unimpaired, but I will never advise any of my friends to go through a similar experience, as it involves great suffering and is attended by no inconsiderable immediate and remote risk to life.

THE PEOPLE.

India has, approximately, 300,000,000 inhabitants, four to one of the United States. The population is a very mixed one, composed of Hindus, Afghans, Mohammedans, Parsees, Thibetans, and other Asiatic races, Europeans and a mixture of Europeans and Asiatics, called here Eurasians, in Ceylon half-castes. The original East Indians were an Aryan race, which came from Central Asia by way of the Cabul river. The present Hindu race represents Aryan and non-Aryan elements. The typical Hindu is above average size, fine, erect, slender physique, long, very thin legs and arms, straight black hair, beard of the same color, light or heavy. The color of the skin varies from yellow to coal black. Many of the men are handsome; others, especially the common coolies, are often not only ugly but absolutely hideous, their faces approaching the appearance of a monkey rather than that of a man. The women are homely almost without exception; much smaller than the men and very spare even during old age.

The handsomest men and women are found among the Parsees, the fire worshipers, who came from Persia to India centuries ago. They are a thrifty people, fond of dress. The men wear a very strange head covering, which does not answer to the description of either a hat or cap. Imagine a black piece of stovepipe a foot in length, speckled with minute yellow dots, and turn in the top obliquely and you have as complete a description of the headdress of the Parsee as can be given. The women are dressed in flowing silk of vivid colors, and display a wealth of jewels attached to ears, neck, fingers and wrists. Bombay is the center of the Parsee population, about 100,000 in number. Their principal temple and ghastly graveyard are located here.

Social distinction is drawn in India in more definite lines than in any other country. It is a land of castes. There are more than 1,000 of these castes, which have very little in common with each other. The Brahmins or priests take the first rank, the warriors the second, and the merchants the third; then follow the different professions and trades. The caste of warriors is the only one which is permitted to hunt and to eat meat. There is never an intermarriage between a high caste man or woman with a lower caste woman or man, but in exceptional cases a promotion from a lower to a higher caste with all privileges belonging to such advancement may take place. The lower castes make themselves known by stripes and dots of all colors and designs on the forehead or face. A study of these distinctive marks would prove a very thankless task to the foreigner owing to the endless number of castes.

The religious life in India is as mixed as its population. In 1891 there were 207,731,727 Brahma followers, 7,131,361 Buddhists, 57,321,164 Mohammedans, and only 2,284,380 Christians, a rather discouraging showing for the millions and millions of dollars that have been spent in efforts to christianize the people. The slow progress of christianity in India is due, at least in part, to the character of the people. The complicated class distinction is one of the greatest obstacles. The high caste Hindu prides himself on the antiquity of his religion. He is firmly convinced that:

> "Antiquity, the nearer it was to its divine origin, perhaps perceived more clearly what things were true."—Cicero.

A high-caste Hindu, a very learned man, a magistrate in one of the eastern districts of India, expressed himself to me on this subject about as follows: "My religion is the oldest in the world. It was old before the religion of the Christians was known. I spent five years in England. I made careful observations and in consequence came to the conclusion that my people are better people than the people I observed in England. Crime is more common in England than in India. Why should I change my religion? The essence of our religion consists in leading a useful, pure life. We believe in progression in spiritual as well as in worldly affairs. As the muscle is strengthened by exercise, so constant efforts to reach a higher spiritual existence will improve progressively the spiritual part of men until perfection is reached. We do not believe in perpetual punishment after death, but in a gradual elevation until nirvana, a state of perfection, is reached. Missionaries can not change the religious views of high caste Hindus. Then, too, the manner of living and the way in which the missionaries approach the low caste Hindus are not calculated to excite their interest or to gain their confidence." This is what the Hindu said.

In conversation with me a Roman Catholic priest who came to India 26 years ago said: "We can do nothing with the adults in the way of converting them. The people appreciate our works of charity and our efforts to educate their children. We must plant the seed of true religion in the hearts of the children, where it will grow, but their parents are out of our reach. The high caste, educated Hindus have their fixed religious ideas from which they can not be diverted, and the low castes are in the firm grasp of the Brahmin and the Buddhist priests."

The natives are suspicious of the Europeans and are naturally proud and not easily approached. The poorest of the

poor possess an inborn pride and manifest a spirit of reserve entirely unknown among the South Sea Islanders. There is no "Alloha" or "Talofa" greeting for the stranger in India. The faces are stern, the look shy, the bearing defiant and smiles few unless they are provoked by a liberal tip. The converted natives may conform on the surface with the teachings of the church to which they belong, but in their inner life they retain much of what they have been taught, and what they practiced before they changed their religious views; we can say of them as well as of their heathen brethren:

> "Some are good, some are middling, the greater part are bad."—Martialis.

And

> "Habit has produced the custom."—Ovidius.

Missionary work has done more good in supplying the starving with food, the sick with nursing and with medical treatment, the poor with clothing and in the education of children than in the christianization of the people. The door to the heart of the Hindu is charity.

The greatest virtue of the coolie is his willingness to work. It is the coolie who cultivates the fields, loads and unloads vessels and cars, cleans the streets, empties the cesspools and performs all other menial work, for wages which range from 8 to 32 cents a day. He has held his place in the competition for cheap labor against Chinese and Japanese, and against cheap workmen from other parts of the world. He meets the demand for labor in India and the low wages with which he is content has so far effectually prevented outside competition, and owing to the dense population and the severe struggle for existence which are in evidence everywhere, precludes the idea of a possible betterment of the condition of the laboring classes. The coolie has no desire to accumulate wealth; he is satisfied if by hard toil he is able to keep the wolf from the door. His needs are few, and what many a Chicago family spends every day for newspapers will support himself, his wife and children. From experience he can say:

> "Ye immortal gods, men know not how great a revenue economy is."—Cicero.

INDIAN ART.

India is a great art museum (Fig. 1, page 207). The ancient palaces, temples and tombs are the silent witnesses of the exquisite workmanship of native artists, who lived and worked here centuries before Solomon's temple was built. The masonry of many of these remnants of ancient architecture is the wonder of the leaders of the craft to-day (Fig. 2, page 208). The size of the stones, the cutting, placing them in positions, the fitting them together with such accuracy that cement of any kind was superfluous, in other instances the fitting together with metallic substances, are lost arts. The designs of the mosaics, the sculpturing and the wood carvings, the inlaid work are marvels of skill, patience and perseverance. The ancient artist and artisan made use of noble material on which to stamp indelibly the proofs of his skill. In short, nature supplies the material, art works on it.

> "Art can effect nothing without material, yet there is an inherent value in material, though untouched by the art of man. Perfection of art is superior to the best material."—Quintilianus.

Symmetry was above everything else the object of the ancient architect, mosaics, columns and arches were the details in carrying out his designs. The two pieces of architecture and design that impressed me most were the royal tomb, Taj Mahel at Benares and the Cave Temple in Elephanta Island near Bombay, the former noted for its exquisite beauty, the latter for its great age and wonderful mural statues, cut out of the hard rock, to which allusion will again be made further on.

It is a source of great regret that the influential and rich natives take so little interest in the preservation and maintenance of their works of art, which after all, are the great magnets that attract thousands of visitors to India annually. Palaces and palatial residences are now being built in imitation of what they have seen abroad. Painters from Italy and France do the decorating. Plush and silk covered furniture is brought from Europe, and the old beautifully carved chairs, tables and other articles of furniture are stored away, sold for a song or given away to make room for things that are not adapted to the climate and that can make no pretention to art. It is very fortunate that Lord Curzon has taken the necessary steps to preserve Indian art by the erection of a great museum of art in Calcutta, in blessed memory of the late Empress Victoria, where the most valuable and interesting specimens will find a permanent resting place for the benefit of future generations of natives and visitors.

It is high time that in the three great cities of Calcutta, Bombay and Madras, associations of Indian art should be founded for the purpose of collecting and preserving specimens of ancient Indian art, and with the object of encouraging the native artists of to-day by patronizing them instead of importing furniture from foreign countries and imitating the artless style of the buildings of the Europeans. For the benefit of natives as well as of travelers, India should remain specifically Indian in dress, customs, agriculture, and especially in art.

(To be continued.)

Therapeutics.

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Treatment of a "Cold."

In speaking of the treatment of a "common cold" Dr. Leonard Williams, in the *Clinical Journal*, London, uses this expression for a catarrhal condition affecting the nasopharynx, larynx or the larger bronchial tubes, in that cold or chill is supposed to be the principal factor in the causation. However, the author thinks that cold has nothing to do with the causation of the condition, but that it is due to irritation of the air passages from bacterial invasion.

The therapeutics of this condition consists in aborting it by washing the microbes out of the nasopharynx by douching and gargling. After filling the nasal douche with an antiseptic solution, the patient should be directed to introduce the solution into one nostril and at the same time keep the mouth open. In this way the solution will flow out of the other nostril instead of into the mouth. If the mouth is kept closed it will find its way into the larynx and esophagus. Therefore, the patient should always be directed to keep the mouth open when using the nasal douche. The author recommends that the solution should be warm and of a temperature not below 98 F. He prefers zinc sulphocarbolate in weak solution as follows:

R.	Zinci sulphocarbolatis	gr. vi	40
	Aquæ dest. q. s. ad	℥iii	90

M. Sig.: To be used, warm, in the nasal douche.

A nasal catarrh, as suggested by the author, may be the beginning of whooping cough, and in this treatment the best measures are to be carried out to cut short the attack and to prevent grave sequelæ. So important is this form of treatment in the early stage of whooping cough that it is grave neglect when it is even delayed until the whoop has begun.

The following combination is recommended as a very efficient antiseptic used as a nasal douche:

R.	Acidi boracici	℥ii	8
	Or		
	Acidi carbolici	gr. x	65
	Glycerini	℥ss	15
	Infusi rosæ acidi q. s. ad	℥viii	240

M. Sig.: To be used as a nasal douche.

[Infusum rosæ acidum is composed of acid infusion of roses (red rose petals), ℥vi (25.) and dilute sulphuric acid ℥iii (12.); aqua destilata Oii (1,000).]

When the irritation is lower down in the air passages, in the larynx, the treatment can not be carried out so successfully. The most successful treatment here consists in the use of antiseptic oils such as eucalyptus, vaporized and inhaled frequently. In addition to this local treatment, mild purgatives should be given to keep the bowels well open, and a hot bath or hot wet pack given to increase the elimination from the skin. If headache is present, with a slight rise in temperature, a moderate dose of opium at bedtime is the best remedy. When administered early in influenza, the author regards opium as almost specific, and in ordinary colds its effect on the inflamed mucous membrane and irritated nervous system assists greatly in relieving the symptoms.

As a tonic after a cold no preparation is more beneficial than quinin, and it is recommended prescribed in the liquid form, as the powder is not so reliable in its action and has a greater tendency to disturb the stomach. When once there is failure in aborting the attack and active inflammation of the mucous membrane has set in, with a feeling of constriction, accompanied by a dry, hard cough, the proper treatment then consists in the administration of sedative or depressing expectorants and not stimulating expectorants. For this purpose the following combination is recommended:

℞ Vini antimonii
Vini ipecacuanhæ, āā ..... m.x |65
Spts. etheris nitrosi ..... m. xxx 2
Liq. ammon. acetatis ..... ℥ii 8
Syr. limonis ..... ℥i 4
Mist. amygdalæ q. s. ad ..... ℥i 30

M. Sig.: To be taken at one dose and repeated in four hours, or half the quantity every two hours.

The foregoing combination should not be given when a valvular disease of the heart is present, as ipecacuanha and antimony are both very powerful heart depressants. After the congestion of the mucous membrane has subsided, stimulating expectorants are indicated, and for this purpose the following is recommended:

℞ Ammon. carb. ..... gr. v |30
Tinct. camph. co. (B. P.) ..... m. xx 1|30
Syr. scillæ ..... m. xxx 2
Syr. tolutani ..... ℥i 4
Infusi senegæ ..... ℥i 30

M. Sig.: To be taken at one dose and repeated every four hours.

Opium is one of the best remedies in aborting a cold, according to Yeo in *Clinical Ther.*, and it acts best when combined with other diaphoretics. Its effects on the capillary circulation of the respiratory passages is very beneficial in the initial stage of the attack.

In those patients who are inclined to disturbances of liver function opium preparations should be avoided and other diaphoretics substituted as follows:

℞ Spts. etheris nitrosi ..... ℥iv 15
Liq. ammon. acetatis ..... ℥ii 60
Salicini ..... gr. xl 2|65
Vini ipecacuanhæ ..... m. xl 2|65
Aquæ camphoræ q. s. ad ..... ℥viii 240

M. Fiat mistura. Sig.: One tablespoonful every four hours.

After the first twenty-four hours quinin is recommended, given in the form of the following effervescing mixture:

℞ Potass. bicarb.
Sodii bicarb., āā ..... ℥i 4
Ammonii carb. ..... ℥ss 2
Syr. aurantii ..... ℥ss 15
Aquæ q. s. ad ..... ℥viii 240

M. Fiat mistura.

℞ Quininæ sulph. ..... gr. xii |75
Pulv. acidi citrici ..... ℥ii 8
Sacchari lactis ..... ℥i 4

M. et divide in pulv. No. vi. Sig.: One powder dissolved in water and mixed with one-sixth part of the mixture and taken three times a day.

As to local remedies to cut short an attack of coryza the following is recommended in the form of an inhalation:

℞ Liq. ammon. fortis ..... ℥i 4
Spts. vini rectif. ..... ℥ii 8
Acidi carbolici ..... ℥i 4
Aquæ ..... ℥ii 8

M. Sig.: A few drops of the mixture to be dropped on absorbent cotton and the vapor inhaled. Or:

℞ Olei pini ..... ℥ii 8
Camphoræ ..... gr. xl 2|65
Liq. ammon. fortis ..... ℥i 4
Spts. rectif. ..... ℥i 30

M. Sig.: To be used in the form of an inhalation.

As an anodyne spray, Shurley recommends the following:

℞ Mentholi ..... gr. i |06
Alcoholis ..... m. v |30
Calc. phos. precip. ..... gr. v |30
Aquæ q. s. ad ..... ℥ii 60

M. Sig.: To be used as a spray.

As a sedative and astringent the following is of service:

℞ Cocainæ ..... gr. v |30
Aluminj ..... gr. x |65
Aquæ mentholi ..... ℥i 30

M. Sig.: To be used locally as a spray.

Kyle recommends in some cases the following oil spray:

℞ Camphoræ ..... gr. i |06
Mentholi ..... gr. iii |20
Acidi carbolici ..... m. ii |12
Liq. albolene ..... ℥i 30

M. Sig.: As a spray.

As an inhalant the ordinary tincture benzoini comp. is very efficient; one teaspoonful is floated on a pint of hot water and the vapors inhaled.

Creosote may be used in the same manner, using from ten to fifteen drops (.65-1.00) to a pint of hot water.

Bartholow recommends the following combination:

℞ Acidi carbolici ..... ℥i 4
Tincturæ iodi ..... ℥ss 15

M. Sig.: From ten to fifteen drops in a pint of hot water as an inhalation.

As an abortive remedy the following is of service, but must be prescribed with care:

℞ Cocainæ hydrochlor. ..... gr. viii |50
Mentholi ..... gr. iv |25
Salol ..... gr. lxxv 5
Acidi boracici ..... ℥iv 15

M. Sig.: A small amount to be insufflated into the nares three or four times daily.

As a spray the following is recommended:

℞ Mentholi ..... gr. viii |50
Camphoræ ..... gr. v |30
Liq. petrolati ..... ℥i 30

M. Sig.: To be used in the atomizer as a spray after thoroughly washing the affected areas. As a vapor to be inhaled the following is recommended:

℞ Mentholi ..... ℥iss 6
Eucalyptol ..... ℥i 4
Liq. albolene ..... ℥i 30

M. Sig.: A few drops to be floated on a small amount of water, placed over a spirit lamp and inhaled.

Medicolegal.

Privilege Extends to All Proceedings of Judicial Nature.—The Supreme Court of Michigan says, in the case of Dick vs. Supreme Body of International Congress, that the by-laws of the defendant order provide that its decisions shall be final and binding on every member and his beneficiaries, and that no suit shall be commenced by either against it. In this case use was made, over objection, of an affidavit of a physician, consulted by the insured, to the effect that the latter had been sick prior to a certain date. Did the defendant violate a law which was prescribed for its guidance when it admitted in evidence the affidavit in question? The legislature has said: "No person duly authorized to practice physic or surgery shall be allowed to disclose any information which he may acquire in attending any patient."

Section 10,181, Compiled Laws of Michigan of 1897. The proceedings were in their nature judicial, and there can be no doubt that the legislature had power to prescribe rules which it was the defendant's duty to observe. The statute is one passed for the sole purpose of enabling persons to secure medical aid without betrayal of confidence. Did the legislature, in passing the statute, which prescribes a rule of evidence to be observed in judicial proceedings, intend to permit this confidence to be betrayed in any judicial proceedings which it had the power to regulate? To impute any such intention to the legislature was to assume that it designed to defeat its manifest purpose. There is nothing in the statute to limit its operation to any particular judicial tribunal or to any particular class of judicial proceedings. We must therefore assume that it was intended to extend to all proceedings of a judicial character which the legislature had the power to regulate. This statute was, therefore, violated when the physician's affidavit was used as testimony. When the defendant rejected the plaintiff's claim because of testimony admitted against objection, and which the law in positive terms forbade it to consider, there was a denial of the hearing to which the plaintiff was lawfully entitled. It was the defendant's duty to observe the law, prohibiting the use of this testimony. It was the plaintiff's right to have that law observed. This right and this duty were just as clear and obvious as if they had been expressly stated in the by-law which provided for the hearing of the plaintiff's claim. If such by-law had in express terms provided that this law excluding the physician's affidavit should be observed, no one would for a moment maintain that a determination by the defendant in violation of such provision was binding on the plaintiff. The only distinction between the supposed case and the actual one was this: In the supposed case the provision for the observance of the law was expressed; in the actual case that provision was necessarily implied. This distinction afforded no ground for the application of a different legal principle. The court thinks it may also be said that the statute in question not only forbade the use of the physician's affidavit as testimony, but by necessary implication forbade all judicial tribunals (including the judicial tribunal of the defendant) from determining controversies (at least without the consent of the parties) on such testimony, and that the law would not permit the defendant to retain the unlawful advantage obtained by violating its prohibitions.

Liability for Attendance on Employe and Assistance.—The Supreme Court of Montana says that in the case of Bond vs. Hurd an action brought by a physician, the physician was called to attend a man who had been sent by the party sued to receive some of the latter's horses gathered in a certain county, and was injured in moving the horses by being thrown from one of them, and the plaintiff, finding him seriously injured, called in another physician to assist him. The cause of action included, besides the plaintiff's own account for medical services, an account for medical services rendered by the assistant physician, which had been assigned to him. The only evidence in the record on which agency could possibly rest was that of two telegrams passing between another party and the defendant—a telegram of such other party to the defendant announcing that the man had been hurt, and asking if he would pay the "doctor's bill," and the defendant's telegram in reply, announcing that he would do so. The plaintiff saw this telegraphic answer of the defendant, accepted the offer therein contained, and acted on it. No direct authority was given this other party to employ a physician, so that any agency on his part was implied from the telegrams. However, the court says, no agency could be implied from these telegrams which would authorize this party to delegate to the plaintiff the right to engage the assistance of other physicians, and bind the defendant to liquidate their charges. The agent's power to delegate authority is statutory, in Montana; and the testimony did not disclose that this party referred to lawfully delegated to the plaintiff authority to employ an assistant, within any of the provisions of the statute. The court below took the ground that an emergency arose which justified the employment of the other physician. But, in the opinion of the Supreme Court, neither substituted agency nor emergency was sufficient to hold the defendant liable for the charges of the assistant physician. Presumptively, it says, the plaintiff, when he was employed, assumed that he was a competent physician and capable of taking care of the case for which he was employed without assistance. If he concluded that assistance was required, before procuring the same it was his duty, if he desired to hold the defendant liable for the payment of the bills of an assistant, to communicate with him and obtain his consent to the employment. If he had the right to employ the other physician and make the defendant liable for his services, he would have a like right to employ as many other physicians as he might have deemed necessary and compelled the defendant to have paid them all. Continuing, the court says that there would be very grave doubt as to the liability of the defendant to furnish to the injured man medical assistance on the facts disclosed in the record, aside from the above telegrams. The accident by which the man was injured may have arisen from his own personal negligence, or from a direct violation of the instructions given him by the defendant. The law is by no means settled that an employer is liable to furnish an employe with medical aid under all circumstances. Many courts of last resort have held that even a railroad company is not liable to furnish an employe with medical assistance in case of accident. There the work of the employe is at all time dangerous in its character, and the reason for holding the railroad company liable to furnish such medical assistance in case of accident is much stronger than it is when an individual employs another to perform a service which is not dangerous in itself. After an investigation of authorities, the court is of the opinion that the holding of the Supreme Court of Indiana in matters of this character is the correct one, and should be followed. That court, in the case of the Terre Haute & Indianapolis Railroad Co. vs. McMurray, 98 Ind. 358, seems to place the liability of a railroad company on the ground of emergency and urgent necessity. The case of Terre Haute & Indianapolis Railroad Co. vs. Brown, 107 Ind. 336, is also referred to, and as a much stronger case than the one at bar. And the Supreme Court of Montana says that it is satisfied that the record in this case failed to show any such emergency as authorized the employment of an assistant physician, or that the assistant physician was employed by any one having competent authority to that end.

Current Medical Literature.

AMERICAN.

Titles marked with an asterisk (*) are abstracted below

American Medicine, Philadelphia.

January 7.

1 Behavior of Native Japanese Cattle in Regard to Tuberculosis. S. Kitasato, Tokio, Japan.
2 Is Mortality Necessarily Higher in Tropical Than in Temperate Climates. V. Havard, New York.
3 *Treatment of Cancer of the Cervix Uteri in Advanced Stages. J. Wesley Bovée, Washington.
4 *Experimental Study of Lactic Acid Formation, with Special Reference to the Stomach. E. Palier, New York.
5 Some Observations on Astigmatism. L. L. Doane, Butler, Pa.
6 Fatal Case of Cerebellar Abscess. John H. Allen, Portland, Maine.

3. **Treatment of Carcinoma Cervicis Uteri in Advanced Stages.**—Given a case of cancer of the cervix uteri, Bovée says that it is necessary to consider the age of the patient, the family history, the apparent duration of the disease, the variety of the disease, the amount of excavation already resulting from the disease, the amount of infiltration of adjacent tissue, the involvement of other, distant parts, and the presence of other physical disabilities that preclude radical surgical operations. Bovée finds that the disease makes more rapid progress in

young women than in those far advanced in years, and usually causes death in eighteen months, if left alone. The woman of from 60 to 90 usually will live much longer than the woman of 28. A family history of cancer has a deterring influence regarding radical surgery. Severe surgical operations, involving appreciable mortality rates or a marked degree of additional suffering, should not be employed in the treatment of carcinoma of the uterine cervix, except in very early cases. According to the reports of exhaustive microscopic examinations of the tissues surrounding the uterus in cancer of the cervix, we have no means of knowing before operation that eradication is certain in any given case of the disease; hence, such attempts must be reserved for the very earliest and most promising ones. Bovée believes that the galvanocautery and the curette combined furnish the very best local treatment, so far as influencing the progress of the disease is concerned. The curette should be used carefully but thoroughly, the flow of blood being controlled by either gauze or clamp compression. The galvanocautery is then carefully employed to destroy practically all tissue between the cul-de-sac of Douglas and the bladder and, laterally, between the ureters. Great care should be exercised that bladder, ureters, peritoneum, and rectum be not penetrated nor injured by overheating. Vaginal douches of from .5 to 2 per cent. solution of potassium permanganate he has found the most satisfactory to control a malodorous discharge following the use of the cautery. When the cervix is much infiltrated, the canal obstructed, and the discharges, becoming foul, are confined in the uterus, evacuation and provision for future drainage is the proper treatment.

4. **Study of Lactic Acid Formation.**—Palier bases the following laws on what takes place in the test tube and, as he believes, also in the stomach: 1. Lactic acid develops in all organic substances containing carbohydrates, whether sugar or starch; and in some substances even while yet in solid form, such as bread and meat; for instance, at certain seasons which are especially favorable to bacterial development, some lactic acid exists already. 2. Lactic acid formation is due in all cases to bacterial development, even the so-called sarcolactic acid of meat. 3. Lactic acid does not give the usual reaction with the usual test when an inorganic acid is also present in sufficient strength. 4. Its development is hindered when there is an antiseptic present such as HCl, for example, but the lactic acid formed before the HCl was added is not destroyed when the latter is added. 5. HCl enters in combination with albuminoids and after some time it does not give the usual reaction, though it was warmed when it was first added; and then bacteria appear and lactic acid begins to form, the latter in substances containing carbohydrates. The bacteria in the stomach bringing about lactic acid formation may be various; but whenever there is alimentary stasis with deficiency of HCl, there is usually found a bacillus, which Palier calls the *Vibrio geniculatus ventriculi*. Experiments have shown him that the presence or absence of lactic acid in the stomach contents can give us some information concerning the condition of that organ, but it is positively not pathognomonic of any particular affection, and any one who will rely much on this for making a diagnosis of cancer, for instance, is surely apt to err, though he may succeed in guessing right a few times. If the acid exists in the stomach contents in small quantity, it is absolutely of no significance; if it is in large quantity it can be easily detected by tests described. So long as the acidity is not very high there is not any alimentary stasis worth mentioning.

Medical News, New York.

January 7.

7 *Disturbances of Digestion in Infants Resulting from the Use of Too High Fat Percentages. L. Emmett Holt, New York.
8 Medical Quacks, Their Methods and Dangers. Champe S. Andrews, New York.
9 Anal Fissure. William M. Beach, Pittsburg, Pa.
10 The Physics and Chemistry of Drug Addiction. Edward C. Hill, Denver.
11 Some Recent Developments in Clinical Pathology. Frederic E. Sondrew, New York.

7. **Digestive Disturbances in Infants.**—Holt believes that disturbances of digestion resulting from an excess of fat are quite as serious, if not quite so obvious, as those which follow the use of too high proteids. Even those who give special attention to infant feeding have been slow to learn the infant's capacity with respect to the digestion of fat. Others, who have given the question less attention, have fallen into error in one of two ways: In following the formulas of the books instead of using an ordinary milk, with a fat content of 4 per cent., they have substituted rich Jersey milk, containing from 5 to 5.5 per cent. fat, thus giving more fat than was supposed to be given. Or, the mistake is made of intentionally increasing the fat, almost without limit, for the purpose of overcoming chronic constipation. Illustrative cases are cited by Holt, as follows: I. Overfeeding with high fats, rapid increase in weight and progress in development until eight months; then general convulsions, followed later by tetany, laryngismus stridulus, fatty liver (?). Recovery after three months' illness. The points of interest in this case were (1) the long period during which the child bore the high percentage of fat without any apparent disturbance; (2) the severity of the nervous symptoms, the suddenness with which they came on, and their long duration; (3) the prolonged disturbance of the digestion and general nutrition; (4) the large liver, and stools consisting of almost pure fat. II. Prolonged feeding with high fat, notwithstanding which constipation and the development of moderate rickets, followed by acute disturbances of digestion with repeated convulsions. III. Overfeeding with fat; convulsions. Recovery. IV. Habitual vomiting aggravated by high fat; serious gastric catarrh, finally cured by stomach washing. V. Feeding with high fat; eczema, habitual constipation, and finally habitual vomiting. Recovery after the fat was reduced to 3 per cent. Holt advises the examination of all milk to be used for feeding purposes and that the physician, in order to interpret correctly the result of these examinations, learn to think in percentages. Children differ very much in their capacity to digest fats, but there is a limit with each child which can not be exceeded without causing trouble. Holt believes that 4 per cent. of fat is about the limit for the average child. Whenever there are marked symptoms of either gastric or intestinal indigestion, the fat should be reduced much below the normal 3 or 4 per cent.

New York Medical Journal.

January 7.

13 The Proper Scope of Scientific (so-called expert) Testimony in Trials Involving Pharmacologic Questions. (To be concluded.) Solomon Solis-Cohen, Philadelphia.
14 Poisoning by Wood, or Methyl Alcohol and Its Preparations as a Cause of Death and Blindness. A Supplementary Report. Casey A. Wood, Chicago.
15 Treatment Following the Bloodless Reduction of Congenital Hip Dislocation. Dexter D. Ashley, New York, and Frederick Mueller, Chicago.
16 *Conservative Treatment of Affections of the Uterine Annexa. Its Indications and Limitations. George Tucker Harrison, New York.
17 *Management of Pneumonia. Oliver T. Osborne, New Haven, Conn.
18 Hemorrhoids. Samuel G. Gant, N. Y.
19 Pneumococcus Arthritis—Report of a Case. W. H. Witt, Nashville, Tenn. With Pathologic Report. William Litterer, Nashville.

16. **Conservative Gynecology.**—Harrison's article is a review of, and comment on, conservative gynecologic operations.

17. **Management of Pneumonia.**—The first consideration in the treatment of pneumonia, says Osborne, should be the establishment of hygienic surroundings, such as a well ventilated room, with plenty of fresh air. That pneumonia can abort itself and that it can also be assisted to abort, may not be frequently, but often is, true. He says: "The profuse sweating caused by a gram of antipyrin, with the action of some brisk purge, followed by morphin to stop the pain, and dry cupping, or, if preferred, a hot poultice, may and often does abort a case of pneumonia." The old treatment with aconite and veratrum viride will probably give the same results, although Osborne prefers not to use these

drugs because of the fear of prolonged cardiac depression. In cases not aborting, the nutrition should be sufficient, but not so forced as to cause gastric flatulence or tympanitis. The nutrition should consist of milk, a quart in twenty-four hours, two raw eggs a day, given in bouillon, with coffee or with sherry or brandy, as seems best. Expressed beef juice, which means more than the blood from meat, is one of the best heart muscle stimulants and should be given in ounce doses three or four times a day. For the bowels, use small glycerin enemas, or, if necessary, a small amount of some saline, such as Hunyadi water. Sponging the extremities and the abdomen (not the chest) with tepid water will reduce the temperature. Gentle massage of the extremities promotes excretion of muscle toxins. Insufficient leucocytosis demands some nuclein preparation, such as nucleic acid, in the dose of one grain, three or four times a day, or thymus, in doses of three grains. Osborne favors warm, moist applications, preferably the old flaxseed poultice, bound tightly to the chest during the first stage to mitigate pain and to add to the general comfort of the patient. Such applications should not be allowed to become cold. He doubts the value of such applications in children, believing that they play a part in causing an empyema. In stopping the use of the poultices, it is important to reduce their size gradually and then to put on some warm, dry absorbent cotton. For the irritating cough, he prefers codein in small doses so as not to depress the respiratory center. The best stimulant for the bronchial mucous membrane he believes to be ammonium chlorid in small doses, especially if combined with a very small amount of ipecac and put up in an acid preparation, such as syrup of citric acid or dilute phosphoric acid in watery solution. Alcohol should not be relied on for a long time in cardiac depression, although for a short time it will tide over such depression and whip up a flagging heart. The dose of whisky should be such as not to give strong odor to the breath, nor to cause a dry skin or a bounding pulse, but just enough to keep the surface of the body warm and the pulse regular. If the heart still fails, and the pulse is bad, not more whisky should be given, but other cardiac stimulants. Many cases of delirium are caused by an overdose of alcohol. Nitroglycerin, 1/200 of a grain, every three to six hours, or a hypodermic of 1/100 of a grain, will give a flagging heart a start and allow time to get the action of other drugs. Venesection of a few ounces of blood will relieve cyanosis, jugular throbbing and a laboring right heart. In any stage of the disease, an irregular pulse tension demands strychnin, 1/30 of a grain, every six hours. Caffein, in the form of coffee, should be given from the beginning of pneumonia, at least once a day, in the morning. Coffee is a food and a cardiac stimulant and tonic. Aromatic spirits of ammonia, or camphor water or spirits are good substitutes for caffein. In acute heart failure a hypodermic injection of a saturated solution of camphor in olive oil may be used. Adrenalin or suprarenalin solution 1 to 1,000, may be used in drops on the tongue, 5 drops every fifteen minutes, several times in an emergency, or 5 drops every three hours regularly. Osborne sounds a note of warning against using suprarenal extract in large doses, or for too long a time, as it may cause depression. Oxygen Osborne considers of undoubted value in emergencies, but says that it should not be considered curative. High injections of normal saline solution are indicated when the kidneys are not acting well or the patient not taking sufficient liquid, provided there is no edema anywhere. During convalescence from pneumonia, if the pulse and heart are weak, he favors the use of tincture of strophanthus in from 5 to 8 drop doses every six hours. To combat sleeplessness, chloral and hyoscin should be used. Ergot is indicated to strengthen a weakened circulation. Severe headache may be often well combated by an ice cap or a saline purge. Profuse perspiration should not be discouraged at any time. Osborne gives no opinion as to the value of the serum treatment of pneumonia.

Boston Medical and Surgical Journal.

January 5.

20 A Consideration of Autointoxication and Autoinfection as Cause of Various Mental Disorders. L. V. Briggs, Boston.
21 The Geographic Distribution of Tuberculosis in Boston in 1901-3 as Compared with the Distribution in 1885-90. A. K. Stone and Alexander M. Wilson, Boston.
22 *Improved Technic for Finney's Gastroduodenostomy. A. H. Gould, Boston.
23 *Cardiac Collapse During Examination of a Post-Pharyngeal Abscess; Incision; Circulation Re-established and Maintained for Four Hours by Massage of the Heart; Death. D. Cheever, Boston.

22. **Finney's Gastroduodenostomy.**—Gould calls attention to the following details, which differ from those in present use in the performance of this operation: 1. The placing of the clamps. 2. Opening of stomach and duodenum; trimming mucous membrane. 3. Omission of guide stitches. A fold of the anterior wall of the stomach, three to four inches long, is picked up parallel to and about one-half inch from the greater curvature. The ends of the clamp are not freed, but are pushed up tightly until the inner jaw rests against the pyloric sphincter, about one-quarter to one-half inch below the free edge of the fold, where they are made fast. The duodenal clamp encloses a similar fold, as it goes obliquely across the bowel from the free edge to the pylorus, and is pushed up until its inner jaw touches that of the stomach clamp, where it is fastened. The handles of the clamps are brought together, the pyloric angle is thus put on a stretch and incision can be made into any part of the area held by clamps or into the pyloric angle without hemorrhage. The duodenum and stomach folds lie side by side, thus obviating the necessity of guides. The two folds are fastened together with a continuous seromuscular stitch beginning at the pyloric angle. The stomach incision is made first and is carried down until the mucous membrane pouches freely between the cut muscular walls. The duodenum is then opened until the mucous membrane of the stomach is met at the pyloric angle. It is occasionally necessary to trim off the mucous membrane from the edges of the duodenal incision. The pouching of the mucous membrane is removed from the stomach by cutting with scissors close to one muscular edge, returning on the other side. The completed incision leaves a tongue-like process made up half of gastric and half of intestinal walls. The two edges of the tongue are sewed together with a continuous through-and-through stitch, which starts from the apex of the tongue and goes across to its base. At this point it is interrupted with a tie before continuing the suture across over the front. When within an inch from the pylorus and the suture over the front is nearly completed, the clamps are loosened to relieve the tension and to allow the last few stitches to be placed. Remove the clamps and bury the suture with a seromuscular stitch. The closing in of the inaccessible pyloric angle is made easy by the introduction of the writer's mattress stitch. The rest of the seromuscular stitch may be continuous.

23. **Cardiac Collapse and Circulation Re-established by Massage of Heart.**—In Cheever's case death was evidently caused by cardiac collapse due to shock, in a patient whose condition of extreme exhaustion made the necessary manipulations in preparing to open the abscess a source of grave danger. Death was not due to suffocation; there was no inhalation of pus, as the abscess was not evacuated until after effort at resuscitation had been begun. There was no serious mechanical obstruction to respiration, hence no indication for tracheotomy; but a rubber tube was introduced into the larynx to supplement the usual method of artificial respiration by direct insufflation, which proved very satisfactory. Later, a tracheotomy was done when the onset of rigor mortis made the reinsertion of the tube through the mouth difficult. Cardiac massage by rhythmical pressure at the rate of 60 to the minute over the third, fourth and fifth left costal cartilages was continued with the artificial respiration for four and one-half hours. It seemed that the circulation of the blood was restored and maintained and that the blood was fairly well oxygenated. The body warmth

was artificially kept up, stimulants supplied and efforts made to raise the blood pressure, but without avail.

Medical Record, New York.

January 7.

24 *The Healing of Tuberculosis (Clinical Features). Herbert Maxon King, Liberty, N. Y.
25 *The Art of Eating Properly (Euphagia) and the Harm of Eating Too Rapidly and Too Slowly (Tachyphagia and Bradyphagia). Max Einhorn, New York.
26 A Recent Epidemic of Typhoid Fever. John B. Briggs, Washington, D. C.
27 Three Cases of Excessive Fetal Development. Julius Rosenberg, New York.
28 *Spleenless Men. J. H. Carstens, Detroit.
29 An Experimental Study of the Movements Produced in the Stomach and Bowels by Electricity. G. G. Marshall, Wallinford, Vt.
30 Definition and Classification of Gastric Hemorrhage. F. Gregory Connell, Salida, Colo.
31 A Case of Sciatic Neuritis with Paralysis, Following Malaria. William G. Russell. New York.

24. **Healing of Tuberculosis.**—Why, asks King, if all are subjected to the infection, does the vast majority escape and only a comparatively small proportion develop a recognizable tuberculous lesion? The painstaking and exhaustive inquiry into the past history of a tuberculous invalid is often full of surprises. One feature, for instance, recurs with such persistent frequency that it merits some attention, and that is the striking difference in time between the presumptive evidence of disease and the first demonstrable evidence, so that at the onset of the recrudescence the original outbreak has been forgotten or regarded as having no relation to the present trouble. So that it is extremely probable that the initial lesion following a tuberculous infection is often obscure in its clinical manifestations and frequently escapes identification. There is nearly always a prompt and very often successful tendency on the part of the organism to a more or less complete repair followed by an interval of apparent health. Following this interval, which may extend into a period of years, there is a strong tendency to relapse. More often than is supposed the real incipiency of the disease is marked by sharp constitutional disturbance. King calls attention to the frequency with which it is possible to trace in the history of a tuberculous patient a first presumptive evidence of disease, followed by a more or less extended interval of apparent health before arriving at the demonstrable onset, which, in the light of the history, must be considered a recrudescence. Whatever may be the facts in an individual case, the safest and most practical policy lies in regarding every apparent recovery from tuberculosis as merely an arrest of the disease, brought about by an acquired immunity which suitable conditions are very prone to destroy. King says that if we are ever to be able to recognize the presence of tubercle during the period of arrest following the first and unrecognized onset, we are most likely to do so through the discovery of definite reactions in the blood serum of the infected. The generally accepted prognostic significance of a Diazo reaction in tuberculosis has application chiefly, if not solely, to the last stages of the disease, and when temporarily present in the early acute manifestations, or in acute exacerbations of chronic lesions, need not necessarily indicate an unfavorable termination. Its disappearance, if present, would be one of the first clinical evidences of improvement.

25. **As to Eating.**—Under the name euphagia, Einhorn describes the correct manner of partaking of food. Violations of these laws are a frequent source of diseases of the digestive system. He mentions some of the factors, such as good company, pleasant conversation, attractive service, etc., which, in addition to a palatable mode of preparation, contribute to make eating the pleasure it normally should be. Tachyphagia, or hasty eating, is a common evil. It gives rise to gastric and intestinal catarrh, hyperchlorhydria and other digestive disturbances. Bradyphagia, eating too slowly, is a comparatively rare occurrence, and is observed mainly in neurasthenics. Two cases are cited illustrating this condition, one patient taking half an hour to consume a glass of milk. The difficulty in eating was explained by the psychic excitement subsequent to the sitophobia and bradyphagia. The patient was put on a more liberal diet and advised to eat more quickly. The second case required twenty minutes for the ingestion of half a plate of soup and twenty-five minutes for a cup of milk. On a more substantial diet and more rapid eating the patient improved. The treatment consists in suitable advice as to when, how and where to eat. The removal of bradyphagia will frequently smooth the path to convalescence and enable the patient to get entirely well.

28. **Spleenless Men.**—Carstens cites two cases, one of sarcoma of the spleen and one of splenic anemia, to prove the great value of splenectomy in some cases. Both patients are now in every way well. The histories also show the value of blood examinations in obscure cases, inasmuch as they enable us not only to make the diagnosis, as a rule, but also point the way to an operation or to non-interference, as the case may be. It has been demonstrated that spleenless men can live in perfect health and that there is no difference between the blood of such men and the blood of those who have not been subjected to splenectomy.

St. Louis Medical Review.

December 31.

32 *Cases Illustrating Certain Remote Dangers of Mechanical Ileus. Willard Bartlett, St. Louis.
33 Climate for Consumption. W. D. Halliburton, Moberly, Mo.

32. **Dangers of Mechanical Ileus.**—As causes of death in mechanical ileus, Bartlett mentions: 1. Autointoxication resulting from the decomposition of albuminous substances and the absorption from the intestinal tract of the products of bacterial development and activity. 2. Inspiration of vomited material while the patient is under the influence of a general anesthetic. 3. The patient's life may suddenly end as a result of drowning himself in his fetid stomach contents, and 4. That one or more multiple obstructions may be overlooked and the error be discovered only when the persistence of symptoms after operation is noted.

Northwestern Lancet, Minneapolis.

December 15.

34 The Surgical Treatment of Pancreatitis. A. T. Mann, Minneapolis.
35 Diphtheria. C. F. Osgood, Morgan, Utah.
36 Stomach Analysis and Its Value. C. F. Coulter, Wadena, Minn.

January 1.

37 *Stricture of the Lachrymonasal Duct. M. H. Hughes, Salt Lake City.
38 *Decapsulation of the Ovaries in Ovarian Dysmenorrhea. George G. Eitel, Minneapolis.
39 Feeding of Typhoid Patients. John Sutherland, Pierpont, S. D.

37. **Stricture of Lachrymonasal Duct.**—Hughes believes that this condition is more common than is supposed usually and that in the majority of instances it is due to disease of the nasal mucosa, to bony hypertrophy of the turbinated bodies, or to deviations of the nasal septum, and occasionally to error of refraction. A rather intimate knowledge of the conditions, with their proper treatment, is an essential factor to success in the care of disease of the tear channel. Many cases may be effectually treated by removing the primary cause. If relief is not obtained, then the punctum may be slit by the iris scissors. This failing, the entire duct should be slit up and graduated stretching resorted to. The galvanic or chemical cautery may be used with good results. The use of astringents is highly useful in the treatment of chronic inflammation of the tear sac. Proper attention should be given to the correction of any deviations from the normal as regards the general health. Locally, gradual dilation with Bowman's probes, from No. 1 to No. 6, is usually sufficient in the majority of cases.

38. **Decapsulation of Ovaries in Ovarian Dysmenorrhea.**—Eitel proposes this procedure for cases of dysmenorrhea of ovarian origin where the ovaries are covered with a tough and greatly thickened serous covering under which are found small cysts varying in size from that of a small pea to a small marble. The technic of the operation is as follows: The ovary is brought into clear view through a median abdominal incision, and one hemostatic forceps is placed at the

juncture of the utero-ovarian ligament and the ovary and another on the upper border of the broad ligament close to the ovary (lateral). By means of these two forceps the ovary is held by an assistant in the proper position while the operator makes an incision with a sharp scalpel from the ovarian ligament across the ovary to the attachment of the broad ligament, through the covering, and then carefully dissects one side and then the other down as far as cysts are encountered. The flaps of the covering of the ovary are now trimmed off, preferably by means of a pair of scissors. The utero-ovarian ligament then is shortened by doubling it on itself in a similar manner as is in vogue in shortening the round ligaments, in order to hold the uterus in a normal position. Hemorrhage can easily be controlled by pressure clamps and fine ligatures. Eitel says that there is absolutely no danger of adhesions forming, except perhaps in cases where there exists or has at some time existed an inflammatory condition which produced adhesions that had to be broken up at the time of the operation. In two cases where he had occasion to reopen the abdomen some months after the first operation, Eitel failed to find any adhesions. The result in every case in which this method has been tried has been an excellent one, and cases in point are cited.

Pacific Medical Journal, San Francisco.

December.

40 *Modern Methods of Hand Sterilization and Skin Disinfection. Winslow Anderson, San Francisco.
41 The Functions of the Nervous System. E. W. King, Ukiah, Cal.

40. Methods of Hand Sterilization.—Anderson describes in detail the methods of hand sterilization and skin disinfection favored by 65 prominent surgeons in this country and abroad.

St. Louis Courier of Medicine.

December.

42 The Baby Incubators on the "Pike." A Study of the Care of Premature Infants in Incubator Hospitals Erected for Show Purposes. (To be continued.) John Zahorsky, St. Louis.
43 Use and Abuse of the Syringe in Aural Practice. Selden Spencer, St. Louis.
44 *Buried Sutures. Edmund A. Babler, St. Louis.
45 Eyestrain as a Cause of Migraine. W. A. Shoemaker, St. Louis.

44. Buried Sutures.—Babler reviews the origin of the buried suture, considering silver wire, silk, linen and catgut, and expresses his preference for the latter, especially when prepared by the cumol method as laid down by N. B. Carson. He says he knows of no instance where chromicized gut prepared by this method has caused any subsequent trouble. He emphasizes the following points: 1. Do not dehydrate the catgut insufficiently or at too high a temperature or the gut will be brittle. Dehydrate slowly. 2. Do not tie the gut tightly. 3. Do not place the dehydrated gut in cold cumol; have the cumol at 100 C. but extinguish the flame under the cumol boiler before placing the gut in the cumol. 4. Use a large cumol boiler so that a large quantity of gut can be sterilized at one time. 5. Brittle catgut is due to insufficient dehydration or to placing the dehydrated gut in cumol below 100 C. 6. Every step in the technic must be carefully performed, and perfect asepsis must be duly observed. 7. Place the glass tubes and the cotton plugs in the sterilizer for one hour each day for three consecutive days before placing the sterile gut in them. 8. Non-absorbable chromicized gut is far more irritating than silver wire. 10. Chromicized gut prepared after the modified cumol method is readily absorbed and perfectly reliable.

Southern California Practitioner, Los Angeles.

December.

46 Rupture of the Urethra. Granville MacGowan, Los Angeles.
47 *Pleurisy with Effusion and Empyema. Joseph K. Swindt, Pomona, Cal.
48 *Some Remarks on Hysterectomy, with Summary Report of 100 Cases. W. W. Beckett, Los Angeles.

48. Hysterectomy.—Beckett makes the following summary of 100 cases of hysterectomy: Of this number 46 were for fibroid growths, 18 for malignant disease, 27 for chronic endometritis, with diseased tubes; 8 for procidentia, 1 for imperforate os. The youngest patient was 16 years old, oldest, 71. Vaginal hysterectomy was performed 72 times; suprapubic, 28 times. Four patients died. One from pulmonary embolism the third day after operation; one from malignant stricture of the bowel seven days after operation; one from surgical shock, and one from exhaustion. Of the malignant cases, 6 have recurred; the earliest one month after operation, the latest one year after operation. In 3 cases there was alarming postoperative hemorrhage, one occurring six days after operation, one eight, and one nine days. In one case clamps only were used; in one case ligatures only, and in the other both clamps and ligatures were used. In each case clamps were reapplied for twenty-four hours. All recovered without further interruption. Whenever possible one ovary was left, and in some cases both. In the case of the 16-year-old girl with imperforate os, the uterus was dilated to the size of a seven months' pregnancy and its cavity filled with retained menstrual fluid. The right ovary was cystic and of about the size of a small orange. In the left side there was an ovarian cyst the size of a fetal head. The left fallopian tube was twelve inches long and distended with menstrual fluid. In 3 cases dermoid tumors complicated the operation. When hysterectomy was done for procidentia, anterior and posterior colporrhaphy was also performed. One patient, after a supravaginal hysterectomy, had a slight, irregular menstruation for nearly two years following the operation. In this case only one ovary was removed.

Medical Times, New York.

January.

49 Narcosomania, with Report of 21 Cases. Thomas H. Evans, Philadelphia.
50 Illustrative Cases Due to Eyestrain with Explanatory Remarks Concerning Them. Ambrose L. Ranney, New York.
51 *Review of Exophthalmic Goiter and Its Treatment. Wm. O. Hewitt, Attleboro, Mass.
52 *Abuse of the Cystoscope in Prostatic Disease. G. Frank Lydston, Chicago.
53 Some Practical Methods of Hydrotherapy for General Practice. Eliot Gorton, Summit, N. J.

51. Quinin in Exophthalmic Goiter.—Hewitt speaks well of the use of quinin in the form of sulphate and the neutral bromid in the treatment of this condition. According to Paulesco, quinin produces a vasoconstriction of the vessels of the head and neck, thereby rendering the goiter smaller, diminishing the pulse rate, and even reducing the exophthalmus. Of three cases under Hewitt's observation, all began with a 5-grain gelatin coated pill of the neutral bromid of quinin, morning and evening; two of the patients are taking twenty grains a day; the third fifteen grains. None have complained of symptoms of cinchonism. One patient under treatment for thirteen months has increased in weight, the nervous symptoms have largely disappeared, a troublesome diarrhea has improved, and the goiter and exophthalmus are much less noticeable. The other two cases show a decided gain in strength and general improvement.

52. Cystoscope in Prostatic Disease.—Lydston says that when the diagnosis of prostatic obstruction is clear the indication for radical operation is also clear, the application of this statement being modified only by the conditions governing the individual case. Any exploration of the bladder which is unnecessary to the establishment of a practical working diagnosis is not only useless but exceedingly dangerous. Cystoscopy is especially dangerous and, where not absolutely necessary, is especially to be avoided because of the traumatism and subsequent danger of infection which the insertion of the instrument necessitates, and the frequent necessity of anesthesia with prolonged exploration of the bladder. The use of the cystoscope, especially when anesthesia is employed, rapidly compounds the immediate danger to the patient, and the subsequent danger of operative procedures. A properly performed radical operation is much less dangerous than a cystoscopic exploration. The use of the cystoscope rarely accomplishes more than the gratification of the curiosity of the operator in the establishment of refinements of diagnosis. So far as the diagnosis of stone is concerned, the use of the cystoscope is superfluous. Whether the presence of stone be established or not, a radical operation for the removal of the

prostate is necessary. The stone can be removed at the same time. There are exceptional cases of posterior median obstruction and of prostatic overgrowths at the neck of the bladder in which the cystoscope is necessary. These cases are safer for exploration than the orthodox type of prostatic obstructions, but even in them diagnosis can usually be established without the cystoscope, and where this can be done the use of that instrument should be avoided.

Buffalo Medical Journal.

January.

54 *Complete Removal of the Shaft of the Tibia for Osteomyelitis, with Restoration of the Bone. George Ben Johnston, Richmond, Va.
55 Toxemia and Infections as Causes of Insanity. Frank Stephenson, Syracuse.
56 The Alexander Operation—Its Immediate and Remote Results. James E. King, Buffalo.

54. **Removal of Shaft of Tibia.**—All Johnston's cases occurred in young males and the trouble was always traceable to a trivial injury. The tibia was involved in five instances and the fibula in one. There was a remarkable variation in the degree of virulence of infection and the extent of destruction of tissue was dependent on the character of the infection. When the latter was severe there were profound constitutional symptoms. Sometimes the condition was mistaken for "growing pains," rheumatism, or erysipelas. Regeneration in all these cases was entirely of periosteal origin, was rapid and complete and deformity resulted only in such cases as had suffered destruction of the epiphyseal line. Deformity never results where a disc of bone is left between the shaft and the epiphysis. The companion bone invariably took on compensatory hypertrophy. In acute cases the time to operate is as soon as possible. In subacute or chronic cases, where the surgeon may elect the time of operation, it is well to defer it until new bone tissue has begun to appear. The operation should consist of free incision and a complete removal of all diseased bone, sparing the periosteum as much as possible. The curette should be avoided, or used very cautiously. The strictest antiseptic precautions must be observed. The after-treatment advocated by Johnston consists of the maintenance of aseptic conditions, avoiding too frequent and rough dressings, immobilization of the leg in a fracture box, carefully shaping the parts as bone tissue develops, by bandages or adhesive straps; protecting the young bone by means of plaster of paris; abstaining from use of the limb until the new bone is capable of sustaining the weight of the body, and looking after the general health.

Illinois Medical Journal, Springfield.

December.

57 A Phantom or Model for Illustrating Herniotomy and Suture Work on the Abdominal Parietes. E. Wyllys Andrews, Chicago.
58 Bronchoscopy for Foreign Bodies in the Bronchial Tubes. E. Fletcher Ingals, Chicago.
59 Practical Value of Blood Examinations. James B. Herrick, Chicago.
60 Immediate Abdominal Section. Denslow Lewis, Chicago.
61 *Pyoktanin and Its Uses as a Surgical Agent. Emanuel Friend, Chicago.
62 *Infant Mortality. William J. Butler, Chicago.
63 Successive Scientific Steps Establishing the Mosquito as the Definite Host of Malarial Fever. Thomas W. Bath, Bloomington, Ill.
64 Psychic Equivalents of Epilepsy. J. F. Hultgen, Chicago.
65 Some Newer Conceptions of the Nature and the Management of Bright's Disease. Alfred C. Croftan, Chicago.
66 Why Digital Exploration Through the Internal Inguinal Rings Should Be Made in Conjunction with Every Alexander Operation. A. Goldspohn, Chicago.

61. **Pyoktanin as a Surgical Agent.**—Friend has found pyoktanin useful in ulcers, burns, inflamed wounds and malignant neoplasms. It may be powdered directly on the surface of large purulent wounds and ulcers until a firm scab is formed, which must then be abandoned to spontaneous desquamation; or it may be employed as a dusting powder mixed with talcum, starch or sugar of milk in the strength of 2 per cent.; a 2 to 10 per cent. ointment, using lanolin, lard, cosmolin or vaselin as a base; pyoktanin pencils to be dipped in water and passed over the ulcerated surfaces, and solutions varying in strength from 1 to 1,000 to a saturated aqueous solution. Friend has made use mostly of the latter preparation. Burns of the second and third degree, quite extensive in size, as well as large varicose and specific ulcerations and osteomyelitic bone fistulæ, were treated with a saturated solution of the drug with excellent results. A solution of 1 to 1,000 was used in irrigating wounds, such as those following lymphadenitis, with good results. The chief advantages of the use of pyoktanin are: 1, The rapidity of action; 2, its drying tendencies of the weeping wound surface and consequent cutting short of the suppurating process; 3, the prevention of adherence of the gauze covering the ulcerated area, and in consequence, the minimum of disturbance to the newly-formed epithelial elements; 4, curbing of excessive granulation tissue; 5, non-irritating, non-poisonous and anodyne effects; 6, ease of application; 7, cheapness.

62. **Infant Mortality.**—Butler finds from a study of vital statistics that there has been a decided yearly increase in infant and early childhood mortality from all causes during the past decade in Chicago. It appears that there has been a decided reduction in the death rate from gastrointestinal and kindred diseases; this was most marked in 1900, since when the drinking water has been greatly improved. Prior to 1900 there seems to have been a variation in the yearly death rate, but since then an unvarying decrease. No one factor seems to explain fully all the figures given. The condition of the water, however, seems to bear an especially important relation. Milk inspection, too, has assisted greatly in so far as it has resulted in a pure, wholesome milk, undiluted and carefully and promptly handled. The education of the people by the profession and the greater interest taken in pediatrics have been of incalculable value. Lastly, the conditions of the poor, among whom infant mortality is by all odds the highest, has improved considerably.

Canadian Practitioner and Review, Toronto.

December.

67 Plea for the Voluntary Admission of Certain Types of Insanity to Institutions for the Insane. James Russell, Hamilton, Canada.
68 *Use of Intoxicating Liquors and Life Insurance. T. Millman, Toronto, Canada.
69 *Operative Treatment of Spina Bifida. E. R. Secord, Brantford.

68. **Liquors and Life Insurance.**—Millman makes the following deductions: 1. That total abstainers, other things being equal, are decidedly the best risks for life insurance. 2. That insurance companies are justified in accepting applicants who confine themselves to a glass of beer or wine, or a pony of whisky to each meal. 3. That such applicants, and those who take one or two glasses between meals should, if accepted, pay extra rates. As there is always danger that the habit will become more decided as time goes on, it is preferable that such applicants be rejected. 4. Those who get intoxicated for a few hours three or four times a year should also be rejected, as the habit is apt to increase. If accepted they should pay extra rates. 5. If more is consumed than in deduction 3, or of intoxication is more frequent and of longer duration than in deduction 4, the applicant should be rejected. 6. Officers and members of lodges should be careful in soliciting applicants who use intoxicating liquors. Medical examiners should carefully analyze the habit of each applicant in respect to the use of intoxicating liquors. They should not simply take the statement of the applicant, but ascertain just how much liquor he takes daily and what hours of the day. 7. As alcohol, taken to excess, damages the cells and the tissues of the body, care should be exercised in acting on the examination papers of applicants who state that one, or other, or both, of their parents were addicted to alcoholic excesses. The reproductive germs are damaged, and the health of the offspring, bodily and mentally, must be impaired. As a rule, they are not long-lived, and many criminals, idiots, etc., come from this class.

69. **Treatment of Spina Bifida.**—Secord believes that there are no absolute contraindications to the operative treatment of spina bifida. The worse the case the more marked becomes the futility of other than operative measures, and the greater the probability that the child will die if left alone. Paralysis, hydrocephalus and marasmus, often spoken of as contraindications, should not be so considered. Each has been and may be

improved. Absolute asepsis, combined with as little handling of nerve tissue as is essential, will give the best results. Loss of cerebrospinal fluid in moderate amounts is not of importance, neither is it necessary to operate on an inclined plane. The use of bony flaps is rarely, if ever, essential.

Wisconsin Medical Journal, Milwaukee.

December.

70 Hydronephrosis. G. D. Ladd, Milwaukee.
71 A Case of Typhoidal Perforation. Edmund W. Holmes, Philadelphia.
72 *Chronic Continuous Secretion of Gastric Juice. L. F. Jermain, Milwaukee.
73 *Estimation of Indemnity in the Case of Loss of Vision, Especially Loss of One or Both Eyes. H. V. Würdemann, Milwaukee.

72.—See abstract in THE JOURNAL, xliii, page 67.

73.—Ibid., page 66.

Medical Bulletin, Philadelphia.

December.

74 Aesculin. William F. Waugh, Chicago.
75 Use of Adrenalin Chlorid Solution in a Case of Collapse Following Administration of Chloroform. James L. Thompson, Castelmaine, Australia.

Nashville Journal of Medicine and Surgery, Nashville.

November.

76 Gastrointestinal Disorders in Children. E. H. Jones, Murfreesboro.
77 Lobar Pneumonia; Its Treatment. J. P. Bates, Clarksville, Tenn.

Richmond Journal of Practice, Richmond.

November.

78 Symptoms and Diagnosis of Cancer of the Stomach. H. S. MacLean, Richmond.
79 Diabetes Mellitis—With Report of a Case. A. G. Brown, Richmond.
80 Surgery of Typhoid Fever. W. W. Keen, Philadelphia.

The Alabama Medical Journal, Birmingham.

December.

81 Observations of Pyosalpinx. G. S. Brown, Birmingham.
82 Report of Abdominal Operations. W. M. Jordan, Birmingham.
83 Intestinal Perforation in Typhoid Fever and Its Treatment. C. Wilson, Birmingham.
84 Uncinariasis, Its Presence in the Birmingham District—Report of Cases. J. M. Mason, Birmingham.

The Journal of Nervous and Mental Disease, New York.

December.

85 A Case of Juvenile Tabes in a Family of Neuro Syphilitics. J. Grinker, Chicago.
86 An Additional Case of Precocious Tabes. J. Grinker, Chicago.
87 Subcortical Cyst and Fibroma Due to Trauma Producing Jacksonian Epilepsy, Cured by Operation. M. Schlapp and J. J. Walsh, New York.

The Kansas City Medical Record, Kansas City.

December.

89 Notes on a Case of Cerebral Hemorrhage. W. J. May, Baker City, Ore.

The Virginia Medical Semi-Monthly, Richmond.

December 9.

90 Practical Points in the Interpretation of Sanitary Water Analyses, from the Physician's Standpoint. E. C. Levy, Richmond.
91 The Appendix and Its Relation to Abdominal Hernia. W. B. DeGarno, New York.
92 Case of Mangled Limb Illustrating Value of Conservative Surgery. Wm. E. Anderson, Farmville, Va.
93 The Etiology of Pulmonary Tuberculosis Considered in Relation to Its Therapeutics. L. F. High, Southern Pines, N. C.
94 Typhoid Fever—I. Fatal Hemorrhage in a Child. II. Double Relapsing Typhoid. R. S. Martin, Stuart, Va.
95 The Early Recognition of Hypertension. H. W. Cook, Richmond.
96 Case of Post-Operative Hysteria Simulating Epilepsy. K. C. Corley, Washington, D. C.
97 Adeno-Carcinoma of Ileo-Cecal Valve, with Large Amount of Fibrous Tissue—Resembling Appendicitis. R. M. Slaughter, Theological Seminary, Va.

The Canada Lancet, Toronto.

December.

99 Pancreatic Inflammations in Their Relationship to Cholelithiasis and Their Treatment. A. W. M. Robson, England.
100 The Progress of Medical Science. J. Grant.
101 Presidential Address, American International Congress on Tuberculosis. E. J. Barrick, Toronto.
102 The Use of the Finsen Light and X-ray at the Old London Hospital. J. Price-Brown.

Brooklyn Medical Journal, Brooklyn.

December.

103 Haste and Delay in Surgical Operations; Both Equally Objectionable. E. D. Ferguson, Troy.
104 The Degenerative Changes in the Myocardium Which Give Rise to Serious Cardiac Disease. R. Clark.
105 The Relation Between Systemic Disorders and Skin Diseases. J. McF. Winfield, Brooklyn.
106 Diagnosis of Ectopic Gestation. A. M. Judd.
107 Fissure in Ano. E. H. Mayne.
108 Acute Catarrhal Otitis Media. L. A. McClelland, Brooklyn.
109 Acute Intestinal Obstruction. W. S. Simmons, Jr.
110 Cystic Goiter of Right Lobe in a Woman 24 years of age. W. A. Tomes.

The Journal of Advanced Therapeutics, New York.

December.

111 Clinical and Experimental Effects of Electrical Currents of High Potential and Frequency. J. H. Burch, Baldwinsville, N. Y.
113 Sensitization of Living Tissues. (Continued.) M. A. Cleaves, New York.
114 Sulphuric Acid as a Means of Drying the Interior of the Static Machine. R. D. Doble, London.
115 Dietetics in the Treatment of Constipation. S. Cohn, New York.
116 Vibratory Treatment of Constipation. A. Snow, New York.
117 Constipation—Its Electrical Treatment. M. W. Brinkmann, New York.
118 Exercise in the Treatment of Constipation. W. L. Savage.

Memphis Medical Monthly, Memphis.

December.

119 A Higher Standard of Physical Manhood. How May It Be Attained? J. L. Crook, Jackson, Tenn.
120 What Can We Do to Prevent the Spread of Consumption by the Negro Race in the Southern States? J. S. Rawlins, Dancyville, Tenn.
121 Dangers of Infection Which Lurk in the Telephone. R. S. Stanley, Memphis.
122 Strabismus. G. H. Savage, Memphis.
123 Lesions of the Brain Affecting the Functions of Speech. B. F. Turner, Memphis.
124 Traumatic Insanity—Report of a Case. W. H. Deaderick, Marianna, Ark.

Toledo Medical and Surgical Reporter.

December.

125 Examination of the Pathologic Feces. R. C. Longfellow, Toledo.
126 What Should Be the Attitude of the State and the Medical Profession Toward the Individual Suffering from Tuberculosis? Wm. A. Dickey, Toledo.
127 Résumé of 100 Abdominal Operations. J. H. Jacobson, Toledo.
128 Granular Lids—Some General Facts. Mark D. Stevenson, Akron.

Journal of the Mississippi State Medical Association.

December.

130 Care of the Newborn. Alma L. Rowe, Forest.
131 Operation for Radical Cure of Inguinal Hernia. W. H. Harrison, Tutwiler.
132 Uncinaria Americana. H. M. Folkes, Biloxi.
133 Treatment of Typhoid Fever. R. B. Stapleton, Hattiesburg.
134 Patent and Proprietary Medicines. R. C. Elmore, Durant.

Medicine, Chicago.

December.

135 The Surgical Treatment of Infantile Paralysis. A. C. Wiener, Chicago.
136 Paretic Dementia and Depressing Delusions. James G. Kiernan, Chicago.
137 Report of a Case of Subphrenic Abscess, Illustrated by Skiagraph. G. E. Pfahler, Philadelphia.
138 A Note on Some Forms of Muscular Inco-ordination. Howard F. Hansell, Philadelphia.
139 Nephritis; Symptomatology and Diagnosis. Augustus A. Eshner, Philadelphia.
140 Fistula in Ano. J. M. Frankenburger, Kansas City.
142 Transmitted Irritability of the Bladder. G. Kolischer and L. E. Schmidt, Chicago.

Journal of Cutaneous Diseases, New York.

December.

143 The Relation of Certain Dermatoses to Each Other and to Changes in Vascular Equilibrium. James Nevins Hyde and Ernest L. McEwen, Chicago.
144 Parasitic Sycosis Communicated from Cattle. Wm. F. Breakey, Ann Arbor.
145 Lichen Planus Verrucosus. A. Ravogli, Cincinnati.
146 Report of a Case of Blastomycosis. Henry H. Koehler and Gaylord C. Hall, Louisville.

New York State Journal of Medicine, New York.

December.

147 Address of the President, New York County Medical Association. Francis J. Quinlan, New York.
148 The Value of Oxygen in Combination with the Different Anesthetics in Common Use. James T. Gwathmey, New York.
149 *An Old Specialty. Jane L. Greeley, Jamestown.
150 *Asthma and Its Relation to Environments from a Blood Etiologic Standpoint. George N. Jack, Buffalo.

149.—See abstract in THE JOURNAL of November 5, page 1409.

150.—Ibid.

Kentucky State Medical Journal, Louisville.

December.

151 Through and Through Gunshot Wound, with Perforation of the Liver. W. A. Quinn, Henderson.
152 Acute Intestinal Diseases of Summer. D. C. Bowen, Nolin.
153 Surgery in Country Practice, with Report of a Case of Fracture of Skull with Loss of Brain Substance. A. M. Crittenden, Ferguson.
154 The History of the Formation of Renal Calculi. O. L. Conrad, Wilsonville.
155 Cactus Grandiflora in Cardiac Derangements. S. L. Reed, Wilsonville.

156 Neurasthenia. J. C. Cassity, Eminence.
157 Tuberculosis of the Kidney. J. Garland Sherrill, Louisville.
158 The Management of Normal Labor. Nevil M. Garrett, Frankfort.
159 Nasal Catarrh. A. H. Edwards, Hopkinsville.
160 Placenta Previa Centralis with Excessive Hemorrhage. Successful Delivery at the Eighth Month. Report of a Case. R. B. Gilbert, Louisville.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

December 24.

1 Stone in the Kidney. H. Bertham Robinson, London.
2 *Notes on Local Anesthesia. Arthur E. Barker, London.
3 A Physiologic Contribution to the Problem of Chloroform Anesthesia. A. D. Waller.
4 An Operation for Fixing Movable Kidney. Andrew Fullerton.
5 *A Note on the Treatment of Thrombosis of the Superficial Veins of the Lower Extremities. C. Mansell Moullin.
6 The Anthropometric Investigation of Hospital Patients. F. C. Shrubsall.

2. **Local Analgesia.**—Barker describes his method of producing local anesthesia. He uses B-eucain, which is far less dangerous than cocain, while possessing analgesic properties little, if at all, inferior to it, and with the concurrent use of adrenalin for the purpose of securing a retardation of circulation equivalent to constriction of the part, he has removed some of the objections as to the duration of the analgesia, the extent of the area which can be dealt with and the amount of the toxic drug to be employed. It is necessary to keep within the safe dose of the drug, and to have at our disposal a large enough quantity of the fluid medium to render it possible to spread the analgesic agent over large areas. For ordinary surgical work Barker finds the following solution to answer well: Distilled water, 140 c.c.; B-eucain, 0.2 grams; sodium chlorid, 0.8 grams; 1 to 1,000 adrenalin chlorid solution, 10 minims. All this quantity of fluid can be used in an ordinary case if necessary and is quite sufficient for most. Twice as much may be injected without ill results. The duration of the insensibility is secured by the admixture of the adrenalin. Without it sensation is only abolished by eucain for about fifteen minutes; with it, for three to four hours. But the analgesia is produced more slowly when adrenalin is employed with the eucain. It is therefore well before all larger operations to wait some thirty minues after injection to allow time for the insensibility to become fully developed. After this the effect appears to deepen for a couple of hours. Waiting has another advantage. When eucain alone is employed the operation must be done at once. The tissues are still in a state of artificial edema which masks the anatomic details unpleasantly. By adding adrenalin to the eucain solution and waiting, the artificial edema has disappeared and details are very clearly seen. Rapid injection is to be avoided; sudden distention of the tissues is disagreeable, if not painful. The fluid should not be used cold nor too hot, for the same reason. All dragging on the parts is to be avoided, lest structures be pulled upon which lie beyond the area of infiltration. Barker has never seen any depressing effects follow the use of B-eucain in a long series of operations. A list of operations done under B-eucain analgesia is appended, and among these are the following: Abdominal sections, hernia operations, amputations, orchidectomy, removal of cyst of thyroid, removal of silver wire from around the patella, operations for fistula in ano, varicose veins, hydrocele, varicocele, etc.

5. **Treatment of Thrombosis of Superficial Veins of Leg.**—Moullin exeises, at the very earliest opportunity, the whole thrombosed portion of the vein with the most excellent results. The wound is healed in a week and the patient can get up cured and freed from all the risks of embolism, deep thrombosis, or recurrence. He has not found that a moderate degree of inflammation makes any difference. It begins to subside as soon as the offending vein is removed; but, of course, in such a case, the wound should not be sewed up tightly, as there is sure to be a considerable amount of oozing afterward.

The Lancet, London.

December 24.

7 The Restoration of Hearing After Removal of the Drum and Ossicles by a Modification of the Radical Mastoid Operation for Suppurative Ear Disease. Founded on the Experiences of 400 Operations. Charles J. Heath, London.
8 *Congenital Intestinal Atresia. H. S. Clogg.
9 *The Intravenous Injection of Antitoxin in Diphtheria. John Biernacki and J. C. Muir.
10 The Parasites of Smallpox, Vaccinia and Varicella. W. E. De Korte, London.
11 *Some Observations on Convulsions in Children and Their Relation to Epilepsy. R. O. Moon, London.
12 Hemoconia. Andrew Love, Glasgow.
13 *An Unusual Case of Diaphragmatic Hernia. H. B. G. Newham.
14 A Case of Congenital Hypertrophic Stenosis of the Pylorus in which Pyloroplasty Was Unsuccessfully Performed. J. Rutherford Morison, Newcastle-on-Tyne.
15 Note on a Case of Acute Cerebral Abscess. A. L. Whitehead, Leeds.

8. **Congenital Intestinal Atresia.**—Two cases of this kind are reported by Clogg. The first was a female infant, aged 6 days. She had passed nothing by rectum and had passed very little urine. Vomiting commenced shortly after birth and persisted in increasing severity, becoming dark brown in color and very offensive. The navel was very prominent—a congenital umbilical hernia. At the necropsy it was found that the large intestine commenced just below the hepatic flexure; the transverse colon, sigmoid flexure and rectum were very shrunken. In the sac of the hernia was the lowest coil of small intestine, from which a diverticulum arose. Beyond this point the intestine which represented the cecum and ascending colon was much contracted; it was too small to permit of the onward passage of contents. The intestine ended blindly in the sac and the large intestine commenced just below the hepatic flexure of the colon. The second patient was a male infant, 4 days old. Shortly after birth he commenced to vomit, the vomitus becoming very offensive. The abdomen was distended. Nothing had been passed by rectum. Operation disclosed that the intestine ended blindly at the lower end of the ileum and was continued on as an impervious cord about half an inch in length into a much shrunken and contracted large intestine. The obstruction was situated about two inches above the ileum.

9. **Intravenous Injection of Diphtheria Antitoxin.**—In the course of nine months Biernacki and Muir treated 38 cases of diphtheria by intravenous injection of antitoxin. These cases are primarily grouped as nasopharyngeal, pharyngeal and laryngeal. In the first group there are 14 cases, with no deaths. In 5 cases intravenous injections only were used; in 6 cases relatively small supplementary doses were given by the subcutaneous method; in 2 cases both methods were equally employed, and in 1 case the greater part of the antitoxin was injected subcutaneously. Of pure pharyngeal cases there were 12, with 1 death. The administration of antitoxin was solely intravenous in 2 cases, mainly intravenous in 5, about equally intravenous and subcutaneous in 2, and chiefly subcutaneous in 3. The laryngeal cases fall into 3 groups—those not requiring operation, those intubated and those in which tracheotomy was performed. In the first group there are two ordinary cases, both ending in recovery. One was treated wholly and the other chiefly by the intravenous method. In a third case the lesion was mainly pharyngeal and nasal, but there was slight laryngeal involvement. It proved fatal. Six cases required intubation only, and all the patients recovered. In 4 cases the treatment was purely intravenous, in 1 mainly so; in the remaining case an equal subcutaneous dose was given. Tracheotomy was performed in 3 cases, with 1 death. In 1 all the antitoxin, and in a second half of it was given intravenously; in the third the intravenous dose was subsidiary. Two brands of serum (A and B) were employed in a previous series of 7 cases, 5 of which resulted fatally. Serum A was previously in use for hypodermic injection, and, when given intravenously, in 3 cases out of 4, it caused, within a short time, a varying degree of chill, pyrexia and circulatory depression. With neither serum was there any aggravation of the rash or of other later effects. In this second series of 38 cases only serum B was employed. The dose intravenously was 20,000 units. In the

entire series there was a fatality of 3 in 38 selected severe cases, a result which seems to favor the intravenous method. However, there has been a general fall in the fatality of diphtheria in the particular district cared for by the authors, and this leaves room for speculation as to whether the subcutaneous method might not have yielded better results. Nevertheless, it will be noted that of 9 cases operated on only 1 died. The authors conclude that even in cases other than laryngeal it seems very difficult, if not impossible, to say of any individual patient that a better result was obtained than might have followed subcutaneous injection.

11. **Relation of Epilepsy to Convulsions in Children.**—Moon urges that a serious view be taken of all convulsions occurring in infancy, and says that we are not justified in supposing that even a single convulsion in childhood will end with itself and have no further evil influence on the life of the child. For most of the cases which arise in connection with an extrinsic cause also have a history of heredity or alcoholism in the parents which are both predisposing causes of epilepsy. Even where there is no such history, and it is assumed that a peripheral irritation is adequate in itself to produce a convulsion in a perfectly normal brain, the mere fact of the convulsions being often repeated makes the brain cease to be normal and creates a distinct pathologic basis for the production of epilepsy. It is impossible to give the precise relation of such convulsions to epilepsy, but Moon believes that a much greater difference is made between these two affections than the facts seem to warrant.

13. **Unusual Case of Diaphragmatic Hernia.**—Newham's patient fell to the ground, a distance of some thirty feet, fracturing the left femur through the middle third and bruising the chest and abdomen considerably, but without signs of any fracture of the ribs. He was also vomiting and in a generally collapsed condition. Some dullness was made out in the flanks which shifted on moving the patient. A diagnosis was made of probably ruptured spleen, but owing to the general grave condition of the patient operative interference was out of the question. There was considerable pain over the cardiac region, somewhat increased on taking food. Later he was suddenly seized with most severe pain in the abdomen, accompanied by dry retching and intense thirst. The symptoms continued more or less severe for two days, when the patient suddenly became unconscious and died in about half an hour. On removing the chest wall at the autopsy, the first organ to present itself to view was the stomach, accompanied by part of the transverse colon, both greatly distended, and the latter showing signs of strangulation. These practically filled the left side of the thorax except for about ten ounces of blood-stained fluid which were present. The left lung was firmly pressed back against the spinal column, it was quite airless, small and deeply pigmented. The heart was healthy, though small and pushed over well to the right of the sternum. The right lung was small, congested and completely bound down by pleuritic adhesions. On examination of the diaphragm, an opening slightly to the left of the middle line, with smooth edges and easily admitting the index finger, was found, through which the stomach and intestines had escaped into the thoracic cavity. The hole in the diaphragm appears to have been made at the time of the accident and was probably caused by sudden, violent muscular contraction.

Semaine Médicale, Paris.

16 (XXIV, No. 51, December 21.) *De l'ostéotomie pubienne par la méthode de Gigli. R. de Bovis (Rheims).

16. **Extramedian Symphyseotomy.**—De Bovis makes out the balance sheet in regard to Gigli's "lateral section of the pelvis." He finds that the operation has been performed in 48 cases to date, and, with the exception of Baumm, all those who have performed it are much gratified with the results, both immediate and remote. Baumm's 2 patients died from infection resulting from laceration of the vagina. He does not give the particulars, and it is possible that the operation may not have been responsible for the fatalities. But even assuming that it was, this mortality of 2 in 48, or 4 per cent., is much less than the mortality of at least 10 per cent. after ordinary symphyseotomy. In every case the wound healed by primary intention. In De Bovis' 2 cases the callus was minimal and finally absorbed, so that a physician would not find a trace of the intervention on palpating the region or by digital examination through the vagina. The posterior articulations of the pelvis should be stretched beforehand to prevent pains later. The other indications are the same as for any symphyseotomy.

Archiv f. Gynäkologie, Berlin.

Last indexed XLIII, page 1585.

17 (LXXIII, No. 3.) *Zur schnellen Erweiterung des Muttermundes nach Bossi auf Grund von 30 weiteren Fällen (mechanical dilatation). B. Ehrlich (Leopold's clinic, Dresden).

18 *Ueber künstliche Frühgeburt bei engem Becken mittels des Bossi'schen Dilatationsverfahrens und daran sich anschliessender Metreuryse (mechanical dilatation). G. Heller (ibid.).

19 *Die Spinal-Analgesie mit besonderer Berücksichtigung ihrer Verwendung in der Gynäkologie und Geburtshilfe. M. Stolz (Graz).

20 Ueber das gleichzeitige Vorkommen von Sarkom und Karzinom im Uterus. O. Nebesky (Innsbruck).

21 Ueber die Dauer der Schwangerschaft (duration of pregnancy). T. Hockstetter (Stuttgart).

22 Zangen-Operationen bei hochstehendem Kopfe (forceps extraction with head up). T. V. Wenczel (Budapest).

17 and 18. **Mechanical Dilatation with Bossi's Dilator.**—Ehrlich states that not a single instance of any noticeable complication of the puerperium, due to the use of Bossi's dilator, was observed in 30 cases of eclampsia. Mechanical dilatation should be reserved for serious cases, but, when indicated, it can be used without dread of complications. Over 100 pages are devoted to the particulars of its application at Leopold's clinic, with analysis of 70 articles on the subject from the literature. Heller relates the details in 30 cases of contracted pelvis in which artificial premature delivery was accomplished with the Bossi, followed by the metreurynter. He emphasizes the importance of frequent external examination of the woman to watch the development of the fetal head during the last two months and that the child should not be taken out of the incubator too soon.

19. **Spinal Analgesia in Obstetrics and Gynecology.**—Stolz summarizes his conclusions on this theme as follows: Injection of .05 gm. tropacocain in 5 c.c. of cerebrospinal fluid is sufficient to induce analgesia in the external genitalia for an hour. The labor contractions are not reduced in frequency, length or intensity, but rather become more vigorous. The reflex action of the abdominal muscles is excluded, but voluntary action is possible and efficient. Spinal analgesia is suitable for operative intervention, but lumbar puncture is not so easy as in the nonpregnant subject. Spinal analgesia gave negative or dubious results in 2 cases of eclampsia. He reviews the particulars of 155 gynecologic and 25 obstetric cases in which it was applied. With only from .05 to .08 gm. of tropacocain the procedure is harmless. The larger the dose the longer and deeper the analgesia, while the larger the amount of cerebrospinal fluid used to dilute it, the greater the extent of the analgesia. A good rule is to use as many c.c. of the fluid as cg. of the tropacocain. In about 56.3 per cent. of the cases of laparotomy it gave sufficient analgesia for the purpose. About 31 per cent. required a little inhalation narcosis to complete the operation, and in 12.7 per cent. the spinal analgesia proved entirely inadequate and had to be supplemented at once by inhalation narcosis. A very small amount of the anesthetic answers the purpose in these circumstances. He has derived the impression that nervous affections and inflammatory processes seem to affect the spinal analgesia unfavorably.

Beiträge z. klin. Chirurgie, von Bruns', Tübingen.

Last indexed page 167.

23 (XLII, No. 3.) Die Einklemmungs-Luxation der Patella. H. Küttner.

24 Ueber Verletzungen der Handwurzel (Os lunatum). A. Wittek.

25 Doppelseitige Subluxation des Metacarpus (non-traumatischen Ursprungs). Ibid.

26 Fall von Luxatio pedis posterior inveterata und deren Reposition. O. Fäster.

27 Zur Technik der Nephropexie. M. Hofmann.

28 Ueber Sarkoms-Uebertragungs-Versuche (transmission of sarcoma). A. Vescher (Basle).

29 Zur Kenntniss der congen. Tumoren der Kreuzsteissbeingegend (in sacrococcygeal region). W. Hagen.
30 *Erfolge der Radikal-Behandlung des Mastdarmkrebses (rectal cancer). L. Küpferle.
31 Altes und Neues zur Behandlung von Knochenhöhlen (bone cavities). J. Wagenknecht.

30. **Radical Treatment of Rectal Cancer.**—Küpferle reviews 238 cases of rectal cancer treated by radical extirpation at Czerny's clinic during the last twenty-five years. About 36.4 per cent. of the patients were women. He states that 17.3 per cent. of the 196 patients operated on several years ago have remained well. This result was obtained in several cases in which the extent of the lesion rendered the outlook very unfavorable. The material is analyzed in detail and compared with the reports from other clinics.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed page 77.

32 (XXVIII, No. 49, December 10.) Zur Frage der Konvulsionen nephrektomierter Kaninchen (rabbits). Blumreich.
33 Kurze Bemerkung zur Lumbal Punktion bei Eklampsie. B. Krönig (Jena).
34 Zur operativen Behandlung der chronischen puerperalen Uterusinversion (Küstner technic). H. Thomson.
35 *Radioscopy of Fetus in Utero.—Ueber den Nachweis des Kindes in der Gebärmutter mittels Röntgenstrahlen Albers-Schönberg (Hamburg).

35. **Radioscopy of Fetus in Utero.**—Albers-Schonberg has succeeded in obtaining good radioscopic views of the fetus at eight months in 2 cases. He accomplishes this by using a special diaphragm which exerts light compression on the abdomen and prevents change of position by the fetus.

Mitteilungen a. d. Grenzgebieten, Mikulicz and Naunyn's, Jena.

Last indexed XLIII, page 1732.

36 (XIII, supplement.) Acute, Non-suppurative Thyroiditis.—Die acute, nicht eitrige Thyreoiditis und die Beteiligung der Schilddrüse an acuten Intoxicationen und Infectionen überhaupt. F. de Quervain (Switzerland).
37 (XIV, Nos. 1-2.) *Syphilis of Biliary Apparatus with Febrile Course.—Ueber die fieberhaft verlaufende Lues der Gallenblase und Gallengänge sowie der Leber. B. Riedel (Jena).
38 *Experimentelle Untersuchungen über die Einwirkung der Röntgen-Strahlen auf innere Organe. H. Heineke (Leipsic).
39 Zur Klinik und Pathologie der hämorrhagischen Pankreas-Nekrose. E. Rautenberg (Königsberg). Three cases.
40 Zur Hepato-Cholangio Enterostomie und zur Anatomie der Gallengänge (of biliary passages). Enderlen and Zumstein (Marburg).
41 Klinische und exp. Beiträge zur Physiologie der Schilddrüse und der Epithel-Körperchen (thyroid gland and epithelial bodies). F. Pineles (Vienna).
42 *Zur Kenntnis der Tumoren des Kleinhirnbrückenwinkels ("Zentrale Neurofibromatose," "Akustikus-Neurome). O. Funkenstein (Königsberg).
43 Ueber das Rinden-Zentrum für kontralaterale Augen- und Kopfdrehung (cortical center for deviation of eyes and head). Zur Verth.
44 *Ueber komplizierende Nephritis bei Perityphlitis. W. Hildebrandt (Freiburg).
45 *Mechanismus der Darmeinstulpung bei einem Kinde mit 3 Invaginationen, 2 descendierenden und 1 ascendierenden. B. Riedel.
46 Eine seit 3 Jahren sich wiederholende spontan zurückgehende, schliesslich irreponibele Invaginatio ileo-ileo-colica. Ibid.

37. **Febrile Luetic Cholecystitis.**—Riedel ten years ago had an opportunity to observe a case presenting the typical clinical picture of cholecystitis due to impaction of a gallstone in the neck of the gall bladder. An operation revealed merely thick bile in this organ, with adhesions connecting it to the duodenum and omentum. Fresh deposits of fibrin on the liver indicated that there must have been some recent and violent inflammatory process nearby. The liver contained a number of grayish nodules in the right lobe, unmistakable evidences of lues. This assumption was confirmed by the subsidence of all symptoms following the use of potassium iodid. The patient was a woman of 52 with no knowledge of a syphilitic infection, but who had 2 illegitimate children. In 2 other cases the syphilitic nature of the cholecystitis without icterus was recognized, but the pains were so intense that an operation was undertaken. It disclosed extensive adhesions and changes in the liver in both cases. The patients still have pains at times. In another case a febrile syphilitic process in the liver simulated cholecystitis. The patient was a physician of 37 and the intermittent colics with evening temperature of about 38 C., persisting for months, did not interfere with his practice nor debilitate him. Empyema of the gall bladder was his own diagnosis, and he clamored for an operation. A simple incision showed that this was a mistake, but the symptoms permanently subsided afterward. Syphilis of the liver is not rare, but it is frequently unrecognized. The patients generally belong to the upper classes, have consulted many authorities, and their disturbances have usually been ascribed to gallstones, or to cancer. One of his patients had been taking a course of treatment for a supposed inoperable cancer of the stomach; 6 bottles of potassium iodid caused a disappearance of all symptoms. Riedel has encountered only one serious case of acute cholecystitis *sine concremento*. All the others ran a harmless course. In another instance a child of 3 succumbed to an acute infection of the smaller biliary passages, originating in the papilla, with an abscess above the liver communicating with the pleural cavity. This case confirms the possibility that a perfectly healthy liver may become so infected that an abscess results without the presence of stones or of any lesion in the liver, and without any general constitutional disease. Several other unusual cases are described, among them that of a woman with febrile periods, icterus, liver dullness 18 cm., no tumor, no albuminuria, and not a trace of pain. The authorities discarded the idea of gallstones, but incision disclosed a large stone in the bile duct and pus in the gall bladder, the liver comparatively sound.

38. **Influence of Roentgen Rays on Internal Organs.**—Heineke's research on mice, rabbits, guinea-pigs and dogs has confirmed the statements of others in regard to the action of the Roentgen rays on the internal organs. The effect observed is entirely independent of that noted on the skin. With the exception of the testicles, the deep action of the Roentgen rays seems to be exclusively restricted to the organs concerned in the making of blood. The action is manifested in two ways: in the annihilation of the lymphoid tissue and in the destruction of the cells of the bone marrow and spleen pulp. This reaction of the lymphoid tissue is specific. It occurs long before any other organ or system of organs shows any changes from the exposure, and the dosage can be calculated to limit the action of the rays to this tissue alone. The reaction is further distinguished by the lack of any latent stage, by its sudden onset, its stormy course, its early termination, the absence of any after-effects and by the rapid restitution of what has been destroyed. In all these points the reaction is directly the reverse of what is observed in regard to the action of the Roentgen rays on other material. We must always reckon with this destruction of the lymphocytes as an inevitable accompaniment of any exposure. It does not seem to entail any undesired or dangerous by-effects.

42. **Tumors in the Groove Between Pons and Medulla.**—Funkenstein draws the clinical picture of a tumor in the recess between the pons, cerebellum and medulla, as illustrated in a number of cases. He asserts that tumors at this point are operable only when they are solitary and unilateral. Bilateral tumors are operable, but they are generally associated with a more or less extensive central neurofibromatosis. Unilateral deafness is an important sign of a unilateral tumor, usually solitary. Sternberg's is the only case on record in which it was associated with multiple tumors. When the deafness is bilateral and a tumor on both sides is probable, and with them central neurofibromatosis, the chances of an operation are far less favorable. As these tumors are of very slow growth, the life expectancy is actually lessened by any surgical intervention. The surgeon's hand may be forced, however, by the importunity of the subject begging to be released from his annoying symptoms. The article is a very complete study of the subject, based on 6 cases and 10 from the literature. The first of the writer's patients died after an operation by Krause's technic, the findings indicating central neurofibromatosis. The second patient succumbed unoperated on. A solitary neurofibroma was found on the right auditory nerve. A solitary neurofibroma involving the auditory and facial nerves on one side, with psammoma of the dura, was found in the cadaver of an elderly woman who had died from peritonitis. The fourth case was one of sarcoma in the cerebellum, the fifth of endothelioma in the left posterior fossa, both fatal. The symptomatology of each of the cases is carefully reviewed. Gibson's is the only one on record cured by operation, and the diagnosis of "acoustic neuroma" was dubious in this case.

44. Complicating Nephritis in Appendicitis.—This article from Bäumler's clinic emphasizes the seriousness of nephritis as a complication of appendicitis. It describes a case of acute hemorrhagic nephritis, the onset coinciding with that of appendicitis. The kidney affection gradually subsided as the other grew worse. Hildebrandt is convinced that he saved his patient only by refraining from operating on the appendix until the kidneys were able to functionate better by the subsidence of the nephritis. The cases on record in which operative treatment was undertaken—regardless of the concomitant nephritis—all terminated fatally. Complicating nephritis, therefore, modifies somewhat the indications for surgical treatment in appendicitis.

45. Triple Invagination in an Infant.—Riedel illustrates a case of triple invagination in a 5 months old infant. The ileum had become invaginated through the ileocecal valve into the cecum, while at the same time there was retrograde invagination of the sigmoid flexure in the descending colon, and the lower end of the sigmoid flexure had become invaginated in the rectum. Conditions were restored to normal by a laparotomy, but the child succumbed to an immediate double pneumonia. The abdominal viscera were found apparently quite normal at the necropsy.

Münchener medicinische Wochenschrift.

47 (LI, No. 48, November 29.) *Fatigue Antitoxin.—Ueber das Ermudungstoxin und -antitoxin. W. Weichardt.
48 Iodin Sulphuric Acid Test for Starch.—Zur Technik der Jod-Schwefelsäurereaktion auf Amyloid. E. Neumann.
49 *Zur Technik der Gruber-Widalschen Reaktion. C. Stäubli.
50 *Zur Serumdiagnose des Typhus abdominalis mittelst des Fickerschen Diagnostikums. J. v. Tiling.
51 Zur Differenzierung von Streptokokken aus Uterus-Lochien normaler Wöchnerinnen. F. Schenk and A. Scheib.
52 Ueber die diagnostische und prognostische Bedeutung der mikroskopischen Untersuchung des Lochial-Sekrets. A. Leo.
53 *Temperatur-Suggestionen bei Tuberkulösen. F. Köhler and M. Behr.
54 Dangers of Schultze's Swinging.—Gefahren der Schultzeschen Schwingungen. A. Hengge.
55 *Behandlung der Leukämie durch Röntgen-Strahlen. E. Schenck.
56 *Fall von Leukämie mit Röntgenstrahlen behandelt. Cahen.
57 Die Verwendung von Balsamum peruvianum bei der Wund-Behandlung. F. Burger.
58 Cure of Recurring Hydrocele with Adrenalin.—Eine neue Methode der Hydrocele-Behandlung. J. Rupfle.
59 Ein Apparat zur Herstellung jeder Art von Extension. E. Friedheim.
60 *Pessary Thermometer.—Bestimmung der Fieberhöhe durch Dauermessung. E. Oertmann.
61 *Breast Sucking and Bottle Sucking.—Brustsaugen und Flaschensaugen. A. Schmidt (Dresden).
62 Address at Opening of Amphitheater.—Lehren und Lernen in der Heilkunde. H. Fehling (Strassburg).
63 Polyclinic Abuse.—Zur Poliklinikenfrage. L. Heidenhain.

47. Fatigue Toxin and Antitoxin.—Weichardt is convinced that he has established the fact that the functioning muscles of warm-blooded animals form a toxin which can be separated by dialysis from the ordinary chemically definable products of disassimilation. Injection of this fatigue toxin into other animals induces the symptoms of extreme fatigue, torpor and death, the same as in animals succumbing to the effects of physical overexertion. This fatigue toxin is not found in the carcasses of unfatigued animals, and other animals injected with their muscle plasma are unaffected by it. The fatigue toxin has the properties of a true toxin, and injected in sufficient amounts causes the production of an antitoxin. This antitoxin differs from the bacterial antitoxins by its extreme stability and by the readiness with which it dialyzes. This explains the facility with which it is absorbed in the digestive tract. It thus displays properties which adapt it for therapeutic use as a restorative and invigorant.

49-50. Technic of Agglutination Test.—Stäubli gives illustrations of a "mixing block," etc., by which the agglutination test is simplified. He takes up a tiny drop of blood in a pipette and then fills the rest of the pipette with physiologic salt solution, centrifugalizing this mixture instead of the serum alone. Much less blood is required than by the ordinary technic. He thinks microscopic examination of the agglutination is indispensable. Tiling merely draws the blood on a scrap of blotting paper and dissolves it out again at his leisure with physiologic salt solution. Neither of the above writers regard the presence of the blood corpuscles as detracting from the accuracy of the test.

53. Suggestion and Temperature in the Tuberculous.—Köhler advises a sham injection before the true tuberculin test, to eliminate the influence of suggestion as far as possible. He also advises an occasional sham injection in the course of systematic tuberculin treatment, for the same reason. Tuberculous subjects should be guarded against emotions and moral impressions liable to raise the temperature by suggestion. A positive response to a tuberculin injection should not be estimated from the increased temperature alone, but from the general condition and changes in the local lung findings.

55-56. Roentgen Treatment of Leukemia.—Schenck's patient treated with the *x*-rays for severe lymphatic leukemia was only symptomatically benefited. She was 53 years old and had noted the spleen tumor for seven years. The spleen diminished in size and the leucocytes became less numerous, but the reds also diminished in numbers and the symptomatic improvement did not seem to retard the progress of the disease. In another case of acute leukemia the leucocytes dropped spontaneously during the week before death from 76,000 to 3,000. In the case treated with *x*-rays about 35 exposures of the spleen and sternum were made, the former for from 5 to 10 minutes, the latter only 4 or 5. The spleen showed no change during the first 20 exposures, but then rapidly diminished in size. Cahen reports the case of a man of 47 whose spleen was hard and so large that it almost filled the entire abdominal cavity, extending a hand breadth beyond the umbilicus on the right and above to the costal arch. The blood findings were 1 to 40. After 22 exposures to the *x*-rays the findings were 1 to 1,073 and the spleen had subsided until it was no longer accessible to palpation. The general health improved to correspond. The long bones were then exposed to the rays and at present, after 40 exposures in all, the patient has just been dismissed but with the understanding that constant surveillance will be necessary to maintain what has been accomplished. The exposures were from 8 to 15 minutes long, the tube hard and at a distance of about 25 cm. The leukemia had been first noticed one year before treatment was commenced.

60. Permanent Pessary Thermometer.—The advantages of a permanent thermometer in the rectum which allows the readings to be made without removal of the thermometer or without disturbing the patient, are obvious to every physician. Oertmann's illustration shows the form he recommends. It is of the same shape and size as an ordinary hemorrhoidal pessary, the mercury being in the bulging end inserted in the rectum. The maximal reading is thus obtained without disturbing the patient. The thermometer could also be made in the shape of or to be attached to an ordinary vaginal pessary.

61. Improved Nipple for Nursing Bottles.—Schmidt describes a hard rubber nipple which absolutely prevents the entrance of air into the nursing bottle, except when desired. It is also possible to regulate the amount of milk the child is getting by adjusting the nipple to regulate the negative pressure in the bottle after the infant has been sucking for a time. He thinks that this nipple approaches the ideal closely. The principal features are a roll of rubber on the inside of the nipple which prevents its being pulled over the neck of the bottle beyond a certain point. One side of the nipple below this roll is slit nearly to the roll. When the negative pressure in the bottle has reached a point where sucking becomes hard, the mother twists the nipple a trifle while the child is still sucking, and thus allows a little air to enter.

Wiener klinische Rundschau, Vienna.

Last indexed page 80.

64 (XVIII, No. 45, November 6.) Forty-six Cases of Frontal Sinusitis.—Ueber operative besonders osteoplastische Eingriffe an der Stirnhöhle wegen chronischer Eiterung derselben. R. Hoffman (Dresden).
65 (No. 46.) 4 Fälle von Sectio caesarea. P. T. Neustube.
66 Ueber Chloroform-Sauerstoff-Narkosen (oxygen). J. Meyer.
67 *Beitrag zur chirurgischen Behandlung der Bubonen. E. Hermann.

67. Surgical Treatment of Inguinal Buboes.—Hermann treated 61 cases of bubo consecutive to hard or soft chancre by injection of a 10 per cent. glycerin emulsion of iodoform. About 8 per cent. were completely cured in less than four

days; 31 per cent. in five days; 26 per cent. in six days, and a duration of from nine to ten days was observed in less than 8 per cent. He first evacuates the pus through a minute incision and then fills the cavity with the emulsion. As it is forced out by the pressure of the surrounding parts, he fills the cavity again two or three times, leaving it distended with the emulsion.

Sei-I-Kwai, Tokio.

Last indexed XLI, page 291.

68 (XXII, No. 6.) *Stature of Japanese.
70 (No. 7.) *Idiopathic Gangrene. U. Kojima. (Commenced in No. 5.)
71 (No. 8.) *Percussive Boundaries of the Lungs. K. Takata.
72 *A Method for Ascertaining the Presence of Carbon in the Blood of Beri-beri Patients; Ozonization the Proper Treatment for Beri-beri. Albert S. Ashmead (New York).
73 *Beri-beri Among the Chinese. Ibid.
74 (No. 9.) *Central Scotoma in Kakke. J. Komoto.
75 (XXIII, No. 1.) *The Causes of Carcinoma. A. Sata. (Commenced in XXII, No. 10.)
76 Spread of Leprosy by Mosquitoes and Fish. Albert S. Ashmead (New York).

68. **Stature of the Japanese.**—Nakamura's statistics sustain the assumption that the physique of the Japanese is advancing with the progress of the nation in general. The data cover the period of eleven years ending in 1902. An average of about 400,000 recruits were examined each year. The proportion of those 5 feet 4 inches or more in height has steadily increased from 10 to 12.67 per cent.; of those 5 feet 1.7 inches in height the proportion has increased from 31.84 to 35.06 per cent., while of those under 5 feet in height the proportion has dropped from over 20 to 16.20 per cent.

70. **Idiopathic Gangrene.**—Kojima reviews the occidental literature on this subject, and states that five Japanese monographs, with microscopic findings, have also been published. Haga's was based on 10 cases, all in males from 27 to 47 years old; Watsuji's on 5 male cases and 1 female case, the ages 31 to 48, and Tanaka's on 3 cases of gangrene of the foot and 1 of the thumb. Kojima's personal experience has included 2 cases in men, aged 44 and 48 respectively. The microscopic findings are those of sclerotic thickening of the intima of the artery and occasionally of the vein, with secondary thrombosis extending upward or downward from the area of thickening, entailing the occlusion of the vessel. The arteriosclerosis does not differ materially from ordinary arteriosclerosis, except that the subjects are younger. The gangrene is probably induced, he thinks, by predisposition, certain mechanical or chemical factors and others which produce sclerosis of the vessels. The left side is affected more frequently than the right, and males more than females. The process may run a chronic course or it may develop suddenly. Amputation is imperative when gangrene has begun, otherwise symptomatic treatment is indicated, with mercury if there is any suspicion of syphilis. (See Stevens' article in THE JOURNAL, Dec. 31, 1904, page 2033.)

71. **Percussion Outline of the Lungs.**—Takata gives diagrams of the boundaries of the lungs as determined by percussion of healthy subjects. His findings differ in several respects from those taught in the text-books.

72-73. **Carbon Dioxid Intoxication Cause of Beri-beri.**—Ashmead presents evidence to show that the charcoal braziers used all the year around in Japanese houses are the cause of beri-beri. They generate carbon dioxid, which is the more injurious from the custom of sleeping on the floor. The Chinese have beri-beri when they burn charcoal, but when they burn other fuel there is no beri-beri.

74. **Central Scotoma in Kakke.**—The central scotoma in the case described preceded the other symptoms of the kakke. It was transverse elliptic in both eyes, as also the scotoma for colors. The eye findings corroborate the theory of a toxic polyneuritis as the essence of kakke.

75. **Causes of Cancer.**—Sata describes considerable experimental research which has not given any conclusive results, although suggesting the probability of a parasitic etiology. He calls attention to some of the questions to be solved before serum treatment can be practicable. Is the so-called cancer serum capable of destroying only the cancer cells, or will it simultaneously injure the normal epithelial cells which are alike in their histogenic structure, or will it not affect the cells in such vital organs as the kidneys, liver, etc.? His experiments failed to demonstrate such a specific action on certain cells with absence of action on others, as is affirmed by some French investigators. The kidney cells seem to suffer most from the action of these cytolytic sera.

Nordisches Medicinisches Archiv, Stockholm.

Last indexed XLII, pages 690 and 745.

77 (XXXVI, Internal Medicine, No. 4.) Die Diet bei der Nephritis. H. Köster.
78 *Weak Heart Action with Mitral Defects.—Ueber Herzschwäche bei Mitralfehlern. I. Stein (Copenhagen) (Commenced in No. 3.)
79 Study of the Gastric Juice.—Die Untersuchung des Magensaftes und ihre Bedeutung, illustriert durch 600 Fälle. H. P. T. Oerum (Copenhagen).
80 *Ueber Intoxikation mit per os eingenommenen Chloroform. H. Ernberg.
81 *Medical Literature of the Northland, 1902-3.
82 (Surgery, No. 4.) *Behandlung der Darm-Invagination. J. V. Wichmann (Copenhagen). (Commenced in No. 3.)
83 *Acute Suppuration in Tendon Sheaths of Palm.—Klinische Beiträge zur Kenntnis der akute septischen Eiterungen der Schnenscheiden der Hohlhand besonders mit Rücksicht auf die Therapie. W. Forssell. (Commenced in No. 3.)
84 *Ueber die Cephalocele der Augenhöhle (of orbit). A. Stadfeldt (Copenhagen). (Commenced in No. 3.)
85 *The Limits of Hearing Capacity.—Die Grenzen der Schwerhörigkeit. V. S. Stein (Copenhagen).

78. **Weak Heart with Mitral Defects.**—Stein's clinical experience and experimental research have conclusively demonstrated, he thinks, that the chronic insufficiency of the heart in case of a mitral defect may be due to chronic infection as well as to a functional disturbance of the heart's energy. Chronic myocarditis existed in only 4 of his 13 cases, and in none of Romberg's 7, while it was dubious in one of those reported by Krehl. The danger from a rheumatic valvular defect does not lie in the possibility of chronic myocarditis—resulting from the primary rheumatism, but rather in the relative or absolute extent of the valvular defect, and in the possibility of acute or chronic reinfections.

80. **Chloroform Intoxication Per Os.**—The symptoms in the case described had their counterpart in those exhibited by rabbits after ingestion of chloroform. The patient had swallowed from 20 to 30 c.c. of chloroform. Of 47 cases recorded in the literature 28 recovered. In 11 of the fatal cases consciousness was never regained.

81. **Current Medical Literature of the Scandinavian Countries.**—The *Nordische med. Archiv* makes a specialty of very complete and reliable abstracts of all the articles published in the current periodical literature of Norway, Sweden, Denmark and Finland. The abstracts are all in German, with the original titles in full and also translated. A complete oversight of the literature of the Northland is thus afforded every one who can read German. The literary output is extensive and valuable.

82. **Treatment of Invagination.**—In 1893 Wichmann published a monograph on this subject, and now brings it down to date. He groups the statistical material in a number of instructive tables, etc. In the adult, non-operative treatment is rarely successful. Invagination occurs more frequently in the small intestine. When the colon and ileum are involved—which occurs in from 45 to 55 per cent. of the cases—reduction is impossible. Fully 45 per cent. of the total invaginations were accompanied by complications. Early primary laparatomy is the standard procedure, but he warns that it is necessary to examine the patient again in the narcosis before using the knife, as in several cases spontaneous reduction had occurred at the last moment, and, at the laparotomy, the conditions were found normal. The material reviewed includes 1,184 cases. Of the 1,049 cases in which the age was mentioned, 502 were infants, 194 were between 2 and 10, 166 between 10 and 30, and 187 over 30. In the 502 infants only 4 cases are known of total expulsion of the invaginatum. If there is incarceration, operative treatment is the only resource. Opium or morphin generally has a favorable effect in infants, as it checks the progress of the invagination, although it prevents spontaneous reduction. If a good surgical clinic is

at hand the practitioner should send the infant there at once, not even attempting any examination in narcosis, leaving this to the surgeon, as also the decision whether to use the knife or not. In the absence of a good surgeon the practitioner should remember that non-operative treatment of quite recent cases is apt to be successful, but by the second or third day such measures are liable to be dangerous and rarely cure. Manipulations, artificial distension of the large intestine with air or fluids, are liable to cause harm when the intestine has suffered from two or three days or more of invagination. The distension should be moderate and kept up for about ten minutes at a time. Hirschsprung states that these measures proved successful in 37 out of 64 children under 7 in his experience. All with invagination in the small intestine or ileocolon died. The greatest difficulty with these bloodless measures is that it is almost impossible to tell whether reduction has been accomplished or not. The tumor may subside, the bowels move several times, and yet the invagination may still persist to a slight extent and gradually assume its former proportions. Or the tumor and constipation may persist after the invagination has been completely reduced. The temperature generally rises even after reduction. The uncertainty is, therefore, great, and laparotomy is the preferable procedure in favorable surroundings. Even when the physician thinks that the reduction is complete, it is well, if possible, to place the infant in the surgeon's care for surveillance and operation, if necessary.

83. **Suppuration in Tendon Sheaths of Palm.**—Forssell reports 92 cases of tendovaginitis and bursitis and describes his method of treatment applied since 1897. The results are most excellent, compared with those obtained by other technics. He became convinced that the almost inevitable necrosis observed in cases of acute suppurative bursitis of the palm is due mainly to the great pressure exerted by the ligamentum carpi. He established further that no functional harm resulted from slitting this ligament. The action of the hand and fingers was not interfered with in the least by so doing. Consequently treatment should aim to open up the field of infection as early, extensively and as completely as possible. His series of 63 cases thus treated shows the great superiority of the measure and the fine results attained, with the absence of the mutilations formerly noted. The article is accompanied by 15 plates showing the topography of the parts, the technic and the results.

84. **Cephalocele of the Orbit.**—Stadfeldt reports a case of pulsating exophthalmus which he assumed to be a cephalocele of the posterior orbit. He gives the particulars of the 28 similar cases he was able to find in the literature. All except Holmes' case are of European origin. Seven terminated fatally; in 4 after an operation. Two of the others were complicated with hydrocephalus or deformities. In the present case the exophthalmus could be transformed into enophthalmus by pressure on the eye, paralleled by slowing of the radial pulse at the same time. The pulse dropped from 84 to 68, without any brain symptoms. Compression of the left common carotid reduced the pulsation considerably, and there was no nausea. No abnormal murmur was heard and the tension of the eyeball was normal. The pulsation was permanently reduced by ligation of the carotid near the crico-thyroid ligament, and the ptosis of the lid was much relieved by lateral tarsorrhaphy. The ligation of the carotid evidently modified the circulation in the brain and reduced the amount of fluid in the cephalocele, thus inducing great improvement, permanent for a few months to date, at least. The retrospective diagnosis of cephalocele orbitæ posterior was based on the congenital origin, the soft tumefaction, the asymmetry of the skull in general, the presence of coloboma iridis on the same side, and the slight mental and moral apathy displayed by the patient, a young woman, whose speech was rather indistinct, although she appeared to be well developed and healthy.

85. **The Limits of Hearing Capacity.**—Stein insists that a distance of 100 cm. for the whispered voice is not enough of a test for the hearing. Male artisans should be able to hear the whispered voice at 200 cm., while the range should be from 300 to 700 cm. for public or other functionaries. School children, physicians, musicians and midwives should hear the whispered voice at a distance of more than 700 cm. His article is an attempt to show that the hearing capacity required as the standard in certain occupations may be far above or below the standard required in others. He remarks that housewives can get along with a minimal standard of 150 cm. When the size of the room does not allow a test beyond a certain distance, he adds + to the figure representing the distance.

Books Received.

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

TEXT-BOOK OF INSANITY BASED ON CLINICAL OBSERVATIONS for Practitioners and Students of Medicine. By Dr. R. von Krafft-Ebing, late Professor of Psychiatry and Nervous Diseases in the University of Vienna. Authorized Translation from the Latest German Edition by Charles Gilbert Chaddock, M.D., Professor of Diseases of the Nervous System in the Marion-Sims-Beaumont College of Medicine, Medical Department of St. Louis University, St. Louis, Mo., with an Introduction by Frederick Peterson, M.D., President of the New York State Commission in Lunacy. Pp. xvi—638. Price, $4.00 net. Philadelphia: F. A. Davis Company.

THE SURGICAL DISEASES OF THE GENITO-URINARY TRACT, VENEREAL AND SEXUAL DISEASES. A Text book for Students and Practitioners. By G. Frank Lydston, M.D., Professor of the Surgical Diseases of the Genito-Urinary Organs and Syphilology in the Medical Department of the State University of Illinois (the College of Physicians and Surgeons). Second Revised Edition. Illustrated with 233 Engravings and 7 Colored Plates. Cloth. Pp. xv—1008. Price $5.00 net. Philadelphia: F. A. Davis Company.

A COMPEND OF THE PRACTICE OF MEDICINE. By Daniel E. Hughes, M.D., Late Chief Resident Physician Philadelphia Hospital. Seventh Revised Edition. Edited, Revised and in Parts Rewritten by Samuel Horton Brown, M.D., Assistant Dermatologist, Philadelphia Hospital. Including a Series on Mental Diseases and a Very Complete Section on Skin Diseases. Illustrated. Leather. Pp. 779. Price, $2.50 net. Philadelphia: P. Blakiston's Son & Co. 1904.

CLINICAL HEMATOLOGY. A Practical Guide to the Examination of the Blood with Reference to Diagnosis. By John C. DaCosta, Jr., M.D., Demonstrator of Clinical Medicine, Jefferson Medical College. Second Edition, Revised and Enlarged. Containing Nine Full-page Colored Plates, Three Charts and 64 Other Illustrations. Cloth. Pp. 591. Price, $5.00 net. Philadelphia: P. Blakiston's Son & Co. 1905.

A TREATISE ON DISEASES OF THE NERVOUS SYSTEM. By L. Harrison Mettler, A.M., M.D., Associate Professor of Neurology, College of Medicine of the University of Illinois. Complete in One Volume; Profusely Illustrated; Two Color Plates; Full Indexes. Cloth. Pp. 1000. Price, $5.00. Chicago: Cleveland Press. 1905.

MANUAL OF ANTENATAL PATHOLOGY AND HYGIENE. The Embryo. By J. W. Ballantyne, M.D., F.R.C.P.E., F.R.S. Edin., Lecturer on Midwifery and Gynecology, Medical College for Women, and Surgeon's Hall, Edinburgh. Cloth. Pp. 697. Price, $5.00. Edinburgh: William Green & Sons. 1904.

ÆQUANIMITAS with Other Addresses to Medical Students, Nurses and Practitioners of Medicine. By William Osler, M.D., F.R.S., Professor of Medicine, Johns Hopkins University, Baltimore. Cloth. Pp. 497. Price, $5.00. Philadelphia: P. Blakiston's Son & Co. 1904.

BACTERIOLOGY AND THE PUBLIC HEALTH. By George Newman, M.D., F.R.S.E., D.P.H., Formerly Demonstrator of Bacteriology in King's College, London. Illustrated. Third Edition. Cloth. Pp. 497. Price, $5.00. Philadelphia: P. Blakiston's Son & Co. 1904.

A MANUAL OF PRACTICAL OPHTHALMOLOGY. By George A. Berry, M.B., F.R.C.S. Ed., Senior Ophthalmic Surgeon, Royal Infirmary. With 223 Illustrations, Mostly from Original Drawings. Cloth. Pp. 570. Price, $3.00. Philadelphia: J. B. Lippincott Co. 1905.

TEN LECTURES ON BIOCHEMISTRY OF MUSCLE AND NERVE. By W. D. Halliburton, M.D., F.R.S., Professor of Physiology, King's College, London. With Illustrations. Cloth. Pp. 160. Price, $2.00 net. Philadelphia: P. Blakiston's Son & Co. 1904.

FOURTH ANNUAL REPORT OF THE NEW YORK STATE HOSPITAL FOR THE CARE OF CRIPPLED AND DEFORMED CHILDREN for the Year Ending Sept. 30, 1904. Hospital Located at Tarrytown, N. Y. Paper. Pp. 30. Albany: J. B. Lyon Co. 1904.

ANNUAL REPORT OF THE SURGEON-GENERAL OF THE PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE OF THE UNITED STATES. For the Fiscal Year 1904. Cloth. Pp. 675. Washington: Government Printing Office.

PNEUMONIA AND PNEUMOCOCCUS INFECTIONS. By Robert B. Preble, A.B., M.D., Professor of Medicine, Northwestern University. Illustrated. Cloth. Pp. 211. Price, $1.00. Chicago: Cloyd J. Head & Co. 1905.

PUBLIC, SOCIETY AND SCHOOL LIBRARIES. U. S. Bureau of Education. Chapter XVIII. Paper. Pp. 1017. Washington: The Government Printing Office. 1904.

THIRTY-FIFTH ANNUAL REPORT OF THE STATE BOARD OF HEALTH OF MASSACHUSETTS. Cloth. Pp. 646. Boston: Wright & Potter Printing Co. 1904.